CEYLON.

PART IV.—EDUCATION, SCIENCE, AND ART (C).

Administration Report of the Director of Medical and Sanitary Services for 1936.

(*Dr. S. T. GUNASEKARA.*)

NOVEMBER, 1937.

Printed on the Orders of Government.

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DEPARTMENT OF MEDICAL AND SANITARY SERVICES.

REPORT OF THE DIRECTOR OF MEDICAL AND SANITARY SERVICES FOR THE YEAR 1936.

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I.—ADMINISTRATION.

(*a*) (1) Establishment (including vacancies) on December 31, 1936.

Directorate.

1 Director of Medical and Sanitary Services.
1 Deputy Director of Medical and Sanitary Services.
1 Assistant Director of Medical Service.
1 Assistant Director of Sanitary Service.
1 Administrative Secretary.
1 Senior Medical Officer, Headquarters.
1 Senior Medical Officer of Health.
1 Accountant.
1 Assistant Accountant.

Medical Side.

1 Medical Superintendent, General Hospital, Colombo.
1 Medical Superintendent, Lunatic Asylum, Angoda.
1 Medical Superintendent, Leper Asylum, Hendala.
1 Medical Superintendent, Civil Hospital, Kandy.
1 Medical Superintendent, Civil Hospital, Galle.
9 Provincial Surgeons.
1 Medical Officer-in-Charge, Anti-Tuberculosis Institute, Colombo.
1 Radiologist, General Hospital, Colombo.
1 Medical Officer-in-Charge, Dental Institute, Colombo.
84 Medical Officers in Grade I. (20 vacancies).
196 Medical Officers in Grade II. of whom 8 are women (4 vacancies).
17 Honorary House Officers.

Sanitary Side.

3 Inspecting Medical Officers of Estates.
2 Assistants to Inspecting Medical Officers of Estates (Medical Officers in Grade II.).
32 Medical Officers of Health (25 Medical Officers of Health, 7 Medical Officers, Grade II.).
5 Medical Officers for Colombo Port Health Work (1 Medical Officer of Health and 4 Medical Officers, 1 in Grade I. and 3 in Grade II.).
1 Superintendent, Anti-Malaria Campaign.
2 Medical Officers, Anti-Malaria Campaign (Medical Officers, Grade II.).
5 School Medical Officers (2 in Grade I. of Medical Officers and 3 in Grade II.).
1 Superintendent of Health Education Division.
4 Sanitary Engineers (including 3 Assistant Sanitary Engineers).
38 Sanitary Inspectors, Class I. (1 vacancy).
223 Sanitary Inspectors, Class II. (16 vacancies).
4 Draughtsmen (Sanitary Engineering Division).

Laboratory Staff.

1 Director of Bacteriological and Pasteur Institutes and Vaccine Establishment.
1 Bacteriologist (Medical Officer, Grade II.).
1 Assistant Bacteriologist (Medical Officer, Grade II.).
36 Laboratory Assistants (6 vacancies).
1 Medical Entomologist.
14 Entomological Assistants.
14 Laboratory Attendants (3 vacancies).

Nursing Staff.

Recruited through the Overseas Nursing Association:—

8 Matrons (1 vacancy).
1 Assistant Matron.
28 Sisters (2 vacancies).

Recruited from Religious Orders:—

7 Mothers.
117 Sisters.

Recruited in Ceylon:—

6 Sisters (1 vacancy).
1 Relieving Sister (vacant).
1 House Matron.
39 Public Health Nurses (7 vacancies).
1 Nurse, Dental Clinics (vacant).
85 Matrons (9 vacancies).
240 Nurses (13 vacancies).
86 Pupil Nurses.
141 Hospital (73) and Health Unit (68) Midwives.
60 Pupil Midwives.

Clerical Staff.

Head Office:—

1 Chief Clerk, Special Class.
1 Clerk, Special Class.
2 Clerks, Class I.
75 Clerks in Classes II. and III.
1 Stenographer.
1 Despatch Clerk.

Branch Offices:—

79 Clerks in the various branch offices (7 vacancies).

Apothecaries.

20 Apothecaries in Special Class (1 vacancy).
100 Apothecaries in Class I.
287 Apothecaries in Class II. (11 vacancies).

Vaccination.

9 Inspectors of Vaccination (1 vacancy).
33 Male Vaccinators, Class I.
90 Male Vaccinators, Class II. (27 vacancies).
17 Female Vaccinators (5 vacancies).

Civil Medical Stores.

1 Superintendent and Chief Medical Storekeeper.
1 Assistant Superintendent.
9 Supervisors.

Anti-Malaria Campaign.

55 Medical Officers (39 vacancies).
8 Entomological Assistants (4 vacancies).
15 Sanitary Assistants (15 vacancies).
8 Laboratory Assistants (3 vacancies).

Ankylostomiasis.

1 Superintendent, Ankylostomiasis Campaign (Medical Officer, Grade I.).
2 Clerks.
8 Microscopists.
31 Dispensers.

Opium Branch.

1 Opium Storekeeper.
5 Opium Clerks.
10 Opium sellers.

Miscellaneous.

3 Hospital Stewards in Special Class.
6 Hospital Stewards in Class I. (1 vacancy).
33 Hospital Stewards in Class II. (2 vacancies).
1 Sister, X'Ray Electrical Branch.
2 X'Ray Assistants, General Hospital.
3 X'Ray Technicians.
4 Hospital Stores Clerks.
8 Hospital Admitting Clerks.
4 Bookbinders.
3 Telephone Operators.
2 Head Overseers (Sanitary Engineering Division and General Hospital).
10 Hospital Overseers.
6 Motor Ambulance Drivers (2 vacancies).
1 Survey Overseer (vacant).

Minor Employees.

Packers Peons Overseers Hospital Orderlies Dispensary Orderlies Caretakers Male Attendants Female Attendants Opium Store Servants Disinfecting Orderlies Tappal Labourers Itinerating Labourers Latrine Labourers Garden Labourers Burial Labourers Kitchen Labourers Ward Labourers Disinfecting Labourers Nurses' Ayahs Barbers, Dhobies, &c. Cooks and Appus	About 3,500.

(2) Promotions, Appointments, &c.

On the appointment of Dr. R. Briercliffe as Director of Medical Services, Nigeria, Dr. S. T. Gunasekara was appointed Director of Medical and Sanitary Services with effect from October 15, 1936. Dr. H. Amerasinghe was appointed Senior Medical Officer, Headquarters, with effect from October 1, 1936. Dr. Wijegoonewardena and Dr. P. B. Fernando were appointed Provincial Surgeons with effect from August 7, 1936, and October 29, 1936, respectively. Dr. E. T. Christoffelsz and Dr. H. C. Vandort were appointed Medical Superintendents, Kandy and Galle, with effect from August 7, 1936, and December 3, 1936, respectively. Dr. W. A. E. Karunaratne was transferred to the Medical College as Professor of Pathology with effect from March 13, 1936, Dr. P. B. Fernando was appointed Professor of Medicine, and Dr. M. A. Paul Professor of Surgery. Sixteen Medical Officers in Grade II. were promoted to Grade I., viz., Drs. S. L. Cramer, J. Pedris, K. R. Perera, D. S. de Simon, St. J. Puvirajasinghe, P. R. C. Peterson, J. S. Fernando, A. H. T. de Silva, J. Dadabhoy, J. R. Blaze, V. Doraisamy, J. D. L. Perera, G. D. D. Wijesekera, A. B. Mendis, B. S. Jayawardana, and S. R. Gunawardena. Dr. L. C. Wijesinghe, Dr. D. T. de Kretser, and Dr. E. C. Spaar retired with effect from August 7, 1936, October 29, 1936, and July 31, 1936, respectively.

The deaths of Dr. I. T. Kunaratnam and Dr. T. C. Vanderziel are recorded with deep regret.

Mr. W. J. A. van Langenberg, C.C.S., was appointed Additional Administrative Secretary with effect from January 3, 1936, and Administrative Secretary with effect from February 5, 1936, *vice* Mr. C. E. Tilney, C.C.S.

(3) Officers on Leave.

Twenty-seven officers of the department, exclusive of the Nursing staff, proceeded to Europe on long leave during the course of the year.

(4) Special Qualifications, &c.

The following officers obtained special qualifications during the year:—

Dr. F. P. Perera obtained the Diploma of M.R.C.P. (Edin.).

Dr. O. Mathai obtained the Diploma of M.R.C.S. (Eng.), L.R.C.P. (Lond.), and the D.T.M. & H. (Lond.).

Drs. E. L. Wickremaratne, E. A. Fernando, P. D. Mohandirange, and W. H. Schokman obtained the D.T.M. & H. (Lond.).

Drs. K. Somaskandar and M. J. A. Sandrasagara obtained the D.P.H. (Lond.).

Dr. S. Rajendram obtained the D.P.H. (Edin.).

Two officers of the department obtained the Diploma of L.R.C.P. & S. (Edin.) and L.R.F.P. & S. (Glas.).

Dr. G. A. W. Wickramasuriya was awarded the "Bishop Harmon Prize" by the British Medical Association for his essay on "A close investigation into the problems of malaria and ankylostomiasis as factors in maternal and foetal mortality in the Tropics".

(*b*) Legislation affecting Public Health enacted during the Year.

The draft of a Milk and Dairies Ordinance to prevent the adulteration of milk is with the Legal Draftsman.

The draft of a Suburban Bakeries and Aerated Water Factories Ordinance to provide for the licensing and control of bakeries and aerated water factories outside the limits of Local Authorities is under consideration.

The draft of an Ordinance to amend the Lunacy Ordinance, 1873, and thus remedy certain defects now existing, which has been approved by the Attorney-General, is with the Executive Committee for consideration.

The question of introducing a Pure Food and Drugs Ordinance is under consideration.

An Ordinance for the prevention of the breeding and harbouring of mosquitoes is being drafted.

The following regulations were passed during 1936:—

(*a*) Under the Quarantine and Prevention of Diseases Ordinance, 1897:—

Relating to the—

(1) Proper authority to carry out orders of the Director of Medical and Sanitary Services in matters regarding the enforcement and execution of regulations—*Gazette* of May 27, 1936.
(2) Construction of grain stores—*Gazette* of June 19, 1936.
(3) Storing of rice—*Gazette* of June 27, 1936.
(4) Fumigation of cargoes from plague-infected ports—*Gazette* of September 11, 1936.

(*b*) Under the Medical Ordinance, 1927:—

Relating to the control of the practice of midwifery within the following areas:—Kurunegala Urban District Council—*Gazette* of January 10, 1936; Kolonnawa Urban District Council—*Gazette* of March 13, 1936; Dondra Sanitary Board Town—*Gazette* of June 26, 1936; Galle Municipality—*Gazette* of August 28, 1936; Negombo, Beruwala, and Ambalangoda Urban District Councils—*Gazette* of October 9, 1936.

(*c*) **Financial.**

Revenue and Expenditure for the Financial Year ending September 30, 1936.

Revenue.

		Rs.
1.	Hospital and dispensary receipts	433,409
2.	Sales of drugs, &c.	1,601
3.	Sales of drugs, &c., under the Medical Wants Ordinance ..	10,070
4.	Charges for Maintenance under the Medical Wants Ordinance ..	101,166
5.	Opium sales	97,258
6.	Export duties under the Medical Wants Ordinance ..	1,189,709
7.	Payment by the Railway Department for Medical and Sanitary Services	60,000
	Total ..	1,893,213

Expenditure.

		Rs.
1.	Personal Emoluments	6,461,041
2.	Travelling	482,100
3.	Stationery, office furniture, and office requisites	17,100
4.	Electric current	84,292
5.	Rent	80,201
6.	Uniform	27,077
7.	Equipment and contingencies	469,195
8.	Diets	1,341,241
9.	Transport	52,732
10.	Drugs, dressings, disinfectants, and instruments	1,132,235
11.	Grants	73,143
12.	Rebates payable under the Medical Wants Ordinance ..	166,613
13.	Epidemics	327,244
14.	Destruction of rats	14,620
15.	Purchase of opium and general expenses	25,956
16.	Earthfilling, drainage, &c.	35,235
17.	Conservation of cemeteries	597
18.	Removing and relieving sick and destitute persons ..	8,535
19.	Incidental expenses	5,906
20.	Equipment for new hospitals and dispensaries	27,277
21.	Special equipment for existing institutions	3,653
22.	Visit of Dr. Cochrane, Leprosy Expert	1,352
23.	Rural Hygiene conference at Singapore	—
24.	Investigation of foods	18,024
25.	Postgraduate training of six nurses	610
—	Cost of quinine purchased	95,000
—	Entomological candidate for Singapore	1,127
—	Loss of money at Medical Laboratory	22
		10,952,128

The estimated and actual expenditure for the last ten years has been—

	Budget Estimate. Rs.	Actual Expenditure. Rs.
1926–27	10,029,658 ..	9,104,455
1927–28	10,500,274 ..	10,211,104
1928–29	11,009,103 ..	10,216,467
1929–30	11,319,907 ..	10,669,279
1930–31	11,358,152 ..	9,703,775
1931–32	10,795,496 ..	9,805,541
1932–33	10,234,695 ..	9,275,559
1933–34	9,961,700 ..	9,442,749
1934–35	9,992,701 ..	11,720,371
1935–36	10,681,422 ..	10,952,128

The figures do not include the cost of new buildings and improvements to, and maintenance of, existing ones. The revenue of the Island during the financial year ending September 30, 1936, was Rs. 102,770,507.

II.—PUBLIC HEALTH AND GENERAL EPIDEMIOLOGY.

A.—GENERAL REMARKS.

Western Province.—The recovery of the Western Province from the effects of the recent malaria epidemic has been, on the whole, very satisfactory. In Kalutara District the incidence of malaria has been normal since April. In Colombo District, during the latter half of the year, conditions closely approximated to normal. The improvement was least manifest in Negombo District where there was a moderate rise in the incidence in January and again in June and July.

Central Province.—In Kandy District, with the exception of Tumpane and Pata Dumbara, the incidence of malaria was practically normal. The almost complete disappearance of malaria from the hilly districts of Nawalapitiya and Watawala, which were more or less severely affected during the epidemic, is remarkable. In Nuwara Eliya District malaria was restricted to the lowlands of Walapane, where it has always been endemic; the revenue divisions of Kotmale and Uda Hewaheta are now free save a few lowlying villages where a certain amount of malaria still persists. Except for a few localized outbreaks in North Matale and East Matale, where malaria is endemic, the malaria situation in this district showed steady improvement during the course of the year, and the recovery from the effects of the epidemic was very marked especially in South Matale.

Southern Province.—In Galle District, the dispensary attendances, speaking generally, were rather higher than usual, but there were no outbreaks of disease. The incidence of malaria in the district was too low to seriously affect morbidity. During the 2nd and 3rd quarters of the year, the Wellaboda and Kandaboda pattus of the Matara District were in the grip of a severe outbreak of malaria. The peak was reached during the week ending July 11. Owing to the prompt action taken by the department and the provision of ample facilities for quinine distribution, the mortality rate was negligible. Normal conditions prevailed during October and November but in December a second wave occurred which synchronized with the north-east monsoon fever season. In Hambantota District, although no actual outbreaks of malaria occurred during the year, the general health of the population was much less satisfactory than usual. The greater part of this area is hyperendemic and malaria was directly responsible for 75 per cent. of the total morbidity.

North-Western Province.—In Kurunegala and Chilaw Districts the recovery from epidemic conditions had been tardy. At the beginning of the year malaria was responsible for nearly 70 per cent. of the total morbidity but at the end of the year for only 50 per cent. In Puttalam District the conditions were practically normal until the end of October; but during the fever season (November and December) the incidence was high. The dispensary attendances rose to nearly twice and in some places as much as three times the " expected " for this part of the year.

Northern Province.—Jaffna District experienced an unhealthy year. In January, February, and December, which are usually the most unhealthy months, the outdoor dispensary attendances were twice the normal, but malaria did not occur anywhere in epidemic form. During the fever season malaria constitutes about 60 per cent. of the total morbidity, but during the rest of the year it is responsible for only about 20 per cent. In Mullaittivu District severe malaria prevailed till the end of May. Thereafter normal conditions prevailed until the onset of the fever season in November. Mannar District experienced, on the whole, a healthy year.

North-Central Province.—In this Province malaria as usual was the predominant disease and was responsible for over 60 per cent. of the total attendances. The year was throughout unhealthy but the worst months were January, February, March, and December.

Province of Sabaragamuwa.—In Kegalla District, the recovery from epidemic conditions was very satisfactory. Towards the end of the year the malaria situation closely approximated to normal. In Ratnapura District conditions were normal.

Province of Uva.—In this Province malaria was responsible for about 20 per cent. of the total morbidity. There were no outbreaks. The hilly districts that were moderately affected during the epidemic are now free from malaria. The increase in the number of cases treated in hospitals and dispensaries was due to causes other than malaria, mostly influenza.

Eastern Province.—In this Province as usual malaria was the most prevalent disease. During the first six months malaria prevailed to a much greater extent than usual. The conditions closely approximated to normal in August, September, and October; but with the onset of north-east monsoon rains, there was a moderate rise in the incidence.

1.—GENERAL DISEASES.

The most prevalent general diseases of hospital in-patients were rheumatism, intestinal disorders (diarrhoea and enteritis), bronchitis, and pneumonia. Year by year the number of patients who seek hospital treatment for cancer is increasing.

The following statement shows the numbers of cases and deaths of these diseases dealt with in hospitals throughout the Island during the years 1932 to 1936:—

	1932.	1933.	1934.	1935.	1936.
Rheumatism—					
Cases	3,154	3,133	3,934	3,643	4,284
Deaths	11	12	10	14	8
Intestinal disorders—					
Cases	3,516	3,505	7,625	10,639	8,918
Deaths	647	723	1,045	2,163	1,093
Bronchitis—					
Cases	4,185	5,024	6,073	6,240	6,906
Deaths	167	256	279	336	323
Pneumonia—					
Cases	6,134	6,798	9,515	10,706	10,014
Deaths	2,043	2,297	3,054	4,205	4,069
Malignant Growths—					
Cases	1,052	1,112	1,233	1,279	1,636
Deaths	128	113	141	137	168

The total number of deaths from "Cancer and other Tumours" reported by the Registrar-General in respect of the whole Island was 580 during the year 1936, as compared with 589 in 1935, 570 in 1934, 483 in 1933, and 449 in 1932.

Most of the operable cases of cancer resort to the General Hospital, Colombo, for treatment; of a total of 1,111 cases of cancer dealt with in all the hospitals 593 were treated in the General Hospital.

On account of the prevalence of betel chewing the site of the disease in the majority of cases was in the region of the buccal cavity, usually the cheek. The analysis of cases treated is given on page 12.

Cancer Returns of In-patients in Hospitals for 1936.

Sinhalese.

Age.	Sex.	Cheek.		Tongue.		Penis.		Breast.		Uterus.		Palate, Jaw, and Floor of Mouth.		Skin and Extremities.		Stomach.		Caecum.		Rectum.		Liver.		Intestines.		Ovary.		Oesophagus.		Lymph Glands.		Other Sites.		Sites not specified on Notes.		Total.	
		C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
20–30	Male	3	1	—	—	2	—	—	—	—	—	6	1	—	—	1	1	—	—	—	—	1	1	—	—	—	—	—	—	2	—	2	1	17	5
	Female	1	—	1	—	—	—	—	—	12	1	1	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	3	—	4	—	23	2
31–40	Male	18	2	8	1	7	—	—	—	—	—	11	—	1	1	12	1	—	—	1	—	4	1	—	—	—	—	3	1	—	—	1	—	66	8
	Female	11	2	2	—	—	—	28	2	107	3	7	—	—	—	2	1	—	—	—	—	10	1	—	—	1	—	3	—	—	—	15	1	191	11
41–50	Male	19	5	9	2	9	—	—	—	1	—	11	1	8	1	14	1	4	2	2	1	5	1	1	2	3	—	2	1	—	—	5	1	95	17
	Female	14	5	6	1	—	—	18	3	55	2	11	1	3	2	11	2	—	—	—	—	8	1	3	—	—	—	—	—	6	1	12	—	149	20
51–60	Male	14	2	5	—	8	—	—	—	1	—	7	—	—	—	4	1	2	2	2	—	3	2	2	1	—	—	1	—	1	—	2	—	53	9
	Female	10	2	5	1	—	—	17	1	12	2	7	—	—	—	4	2	1	—	—	—	1	—	—	—	2	—	1	—	3	1	6	1	71	11
61 and upwards	Male	6	1	3	—	14	1	—	—	—	—	9	—	1	1	2	—	—	—	1	—	2	1	—	—	—	—	—	—	2	—	2	1	44	6
	Female	4	—	3	1	—	—	1	—	10	3	4	—	2	1	1	—	—	—	2	—	2	1	—	—	—	—	—	—	—	—	22	1	33	7
Total		100	20	42	6	40	1	64	6	198	11	74	4	15	6	51	9	7	4	12	1	37	9	6	3	6	1	10	2	12	2	49	3	19	8	742	96

Tamils.

Age.	Sex.	Cheek.		Tongue.		Penis.		Breast.		Uterus.		Palate, Jaw, and Floor of Mouth.		Skin and Extremities.		Stomach.		Caecum.		Rectum.		Liver.		Intestines.		Ovary.		Oesophagus.		Lymph Glands.		Other Sites.		Sites not specified on Notes.		Total.	
		C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
20–30	Male	8	—	1	1	2	1	—	—	—	—	2	1	—	—	1	—	1	—	1	—	1	1	—	—	—	—	—	—	—	—	4	—	—	—	21	4
	Female	4	—	—	—	—	—	2	—	8	2	—	—	—	—	1	—	—	—	—	—	1	—	1	1	1	—	—	—	—	—	3	—	—	—	22	3
31–40	Male	14	3	1	—	3	—	—	—	—	—	6	—	2	—	2	1	2	—	1	—	3	—	—	—	—	—	1	—	2	—	3	—	—	—	40	4
	Female	8	—	2	—	—	—	1	—	10	1	1	—	1	—	1	—	1	—	1	—	3	—	—	—	2	—	—	—	1	—	8	2	3	—	43	3
41–50	Male	12	2	1	—	7	—	—	—	—	—	2	—	1	—	1	1	1	—	1	—	2	1	1	—	—	—	1	—	1	1	1	—	1	1	33	6
	Female	6	1	1	1	—	—	3	1	11	1	3	1	2	—	1	—	1	1	1	—	1	—	1	—	1	—	—	—	1	—	4	1	1	1	38	7
51–60	Male	8	2	—	—	7	1	—	—	—	—	—	—	1	—	1	—	2	1	1	—	2	2	—	—	—	—	—	—	1	—	2	—	2	—	26	5
	Female	2	—	1	—	—	—	—	—	4	2	2	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	1	—	—	—	1	—	1	—	13	3
61 and upwards	Male	5	1	2	—	4	1	—	—	—	—	3	1	2	—	1	1	—	—	—	—	2	1	1	—	—	—	1	—	—	—	3	—	—	—	24	5
	Female	3	—	—	—	—	—	3	—	1	1	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	11	1
Total		70	9	9	2	23	3	9	1	34	7	20	3	10	—	9	3	9	2	6	—	14	5	4	1	4	—	5	1	6	—	31	3	8	1	271	41

Other Races.

Age.	Sex.	Cheek.		Tongue.		Penis.		Breast.		Uterus.		Palate, Jaw, and Floor of Mouth.		Skin and Extremities.		Stomach.		Caecum.		Rectum.		Liver.		Intestines.		Ovary.		Oesophagus.		Lymph Glands.		Other Sites.		Sites not specified on Notes.		Total.	
		C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
20–30	Male	—	—	—	—	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	3	—
	Female	—	—	—	—	—	—	1	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	—
31–40	Male	2	1	1	—	1	—	—	—	—	—	2	—	—	—	2	—	2	—	1	—	1	—	—	—	—	—	1	—	—	—	2	—	—	—	15	1
	Female	2	1	—	—	—	—	1	—	1	1	1	—	—	—	1	—	1	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	8	2
41–50	Male	2	—	—	—	1	—	—	—	—	—	1	—	—	—	1	—	1	—	—	—	1	1	—	—	—	—	1	—	—	—	1	—	2	—	11	1
	Female	2	1	1	—	—	—	2	1	2	—	1	—	—	—	1	1	1	1	—	—	—	—	—	—	1	—	—	—	—	—	1	—	—	—	12	4
51–60	Male	6	2	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	8	2
	Female	1	1	1	—	—	—	—	—	1	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	2
61 and upwards	Male	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	1
	Female	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Total		19	6	4	1	2	—	4	1	5	2	8	—	1	—	6	1	6	2	2	—	4	1	—	—	2	—	2	—	—	—	1	—	5	—	71	14

C = cases. D = deaths.

2.—COMMUNICABLE DISEASES.

Tables of Communicable Diseases.—The following tables show the number of cases and deaths from the communicable diseases notified for the whole Island inclusive of the three Municipal Towns, and their distribution according to months and Provinces:—

Table I.

Notified Cases of Communicable Diseases with Deaths and Fatality Rates.

	1936.			Fatality Rate Percentage for 1935.
	Cases.	Deaths.	Fatality Rate.	
Chickenpox	6,768	12	·18	·05
Cholera	49	44	89·80	73·30
Diphtheria	103	13	12·62	12·07
Dysentery	3,060	315	10·29	9·14
Enteric	2,503	449	17·88	18·63
Measles	2,775	2	·07	·27
Mumps	1,135	5	·44	·41
Pulmonary tuberculosis	2,679	816	30·45	37·54
Plague	57	46	80·70	93·30
Smallpox	3	3	100·00	13·00
Whooping cough	296	21	7·09	3·97

Table II.

Distribution by Months of Notified Communicable Diseases.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Chickenpox—													
Cases	714	781	844	714	569	379	491	432	594	425	443	382	6,768
Deaths	1	1	4	—	1	1	1	—	—	1	1	1	12
Cholera—													
Cases	—	—	16	29	—	—	—	—	—	4	—	—	49
Deaths	—	—	11	29	—	—	—	—	—	4	—	—	44
Diphtheria—													
Cases	7	8	5	6	14	13	13	11	8	6	6	6	103
Deaths	1	1	—	—	—	2	5	1	—	1	2	—	13
Dysentery—													
Cases	413	204	143	126	120	153	205	224	164	212	456	640	3,060
Deaths	43	22	15	11	9	11	33	23	27	25	42	54	315
Enteric—													
Cases	260	208	267	142	169	223	252	252	218	187	178	147	2,503
Deaths	49	32	48	24	37	25	37	54	48	36	33	26	449
Measles—													
Cases	68	63	70	148	144	259	344	248	238	373	394	426	2,775
Deaths	—	—	—	—	—	1	—	—	—	—	—	1	2
Mumps—													
Cases	95	65	132	91	77	87	132	84	72	90	146	64	1,135
Deaths	—	—	—	—	—	—	—	—	—	1	1	3	5
Pulmonary tuberculosis—													
Cases	220	206	213	190	189	212	277	238	260	255	213	206	2,679
Deaths	67	61	57	51	59	62	81	97	41	84	75	81	816
Plague—													
Cases	9	5	5	7	6	5	4	3	1	3	5	4	57
Deaths	9	3	5	6	5	5	4	1	1	—	3	4	46
Smallpox—													
Cases	1	—	—	—	—	—	—	—	1	—	1	—	3
Deaths	1	—	—	—	—	—	—	—	1	—	1	—	3
Whooping cough—													
Cases	8	7	7	9	23	28	19	24	20	21	62	68	296
Deaths	1	—	1	—	1	1	1	11	2	1	—	2	21

Table III.

Distribution by Provinces of Notified Communicable Diseases.

Province.	Chicken-pox.	Cholera.	Diph-theria.	Dysen-tery.	Enteric.	Measles.	Mumps.	Pulmonary Tuber-culosis.	Plague.	Small-pox.	Whooping Cough.
Western ..	3,821	—	79	1,272	907	1,249	536	1,519	39	3	168
Central ..	903	—	10	190	326	1,156	172	235	14	—	3
Southern ..	1,183	—	3	665	696	102	182	290	2	—	2
Eastern ..	43	49	1	219	37	12	72	54	—	—	2
Northern ..	156	—	—	205	113	2	2	76	1	—	3
North-Central ..	2	—	—	14	22	2	14	34	1	—	5
North-Western ..	128	—	6	86	93	157	25	135	—	—	34
Sabaragamuwa ..	440	—	3	370	273	80	78	299	—	—	76
Uva ..	92	—	1	39	36	15	54	37	—	—	3
Total ..	6,768	49	103	3,060	2,503	2,775	1,135	2,679	57	3	296

Communicable Diseases: (1) **Plague.**—The following is a statement of cases, deaths, and fatality rates for the last five years:—

	1932.	1933.	1934.	1935.	1936.	5 Years average 1931–1935.
Cases ..	77	57	35	60	57	56
Deaths ..	69	52	31	56	46	51
Fatality rate ..	89·6	91·2	88·5	93·3	80·7	91·1

The 57 cases of plague in 1936 show an increased incidence of the disease compared with the average for the previous five years (56). Of these, 45 cases were of the bubonic variety and 12 septicaemic.

The distribution of the cases according to locality is as follows:—

	Cases.	Deaths.
Western Province—		
Colombo City	39	33
Central Province—		
Hatton-Dikoya	11	7
Maskeliya	3	2
Southern Province—		
Weligama	1	1
Midigama	1	1
Northern Province—		
Mannar	1	1
North-Central Province—		
Anuradhapura	1	1

Western Province.—Included among the 39 cases for Colombo is a fatal case discovered in the train at Talaimannar Pier. The person was found to have travelled from Colombo by train en route to India. No cases occurred in this province outside Colombo where these 39 cases have occurred distributed over twelve months of the year.

Central Province: Hatton-Dikoya.—Eleven cases with 7 deaths occurred in this town.

A small outbreak of human plague occurred in May, 1936, preceded by a rat epizootic. Ten cases and 7 deaths occurred in this outbreak. The first case was discovered on May 16, 1936, and a portion of the bazaar area evacuated, when rat campaign was started. It was found that the rats were locally infected with plague and the last infected rat found was on July 9, 1936. Forty-eight rats were found infected and this is the highest recorded for any outbreak in the Island. The last human case in this outbreak occurred on June 13, 1936.

The eleventh case was detected at Ahangama in November, 1936—the patient having arrived from Dikoya with fever and cervical bubo. The source of infection could not be definitely traced. Rat trapping locally showed no infection among rats.

Cyanogas was used in this outbreak for fumigation of rat holes and burrows instead of sulphur and was found to be quite satisfactory.

Maskeliya.—There were 3 cases and 2 deaths. The non-fatal case in this group was detected at Ahangama on August 14, 1936, where the patient had gone after he had developed fever at Maskeliya. The 2 fatal cases occurred earlier on July 27, 1936, and August 2, 1936, respectively.

Local infection of rats was found in this area also. Three infected rats were found, the last on August 14, 1936.

It is believed that merchandise, especially rice, had been removed to Maskeliya from the infected area at Hatton before this area could be declared a diseased locality, by some traders in whose boutiques the disease first made its appearance.

Southern Province: Weligama.—One fatal case occurred in April, 1936. There was no local infection of rats. The deceased who was a dealer in piece goods and cloth had very probably visited Colombo and acquired the infection there.

Midigama.—There was one fatal case in April, 1936. Source of infection could not be traced.

Northern Province; Mannar.—One fatal case occurred in the person of a conservancy labourer attached to the Mannar hospital. Infection was accidentally acquired during the post mortem examination of the fatal plague case from Colombo discovered in the train at Talaimannar Pier.

North-Central Province: Anuradhapura.—There was one fatal case in March, 1936. Eight infected rats were found in this town in the locality where the fatal case had acquired the infection. The last infected rat found was on April 4, 1936.

Rat holes in this area were also fumigated with Cyanogas.

(2) **Cholera.**—The following is a statement of cholera cases and deaths for the five years 1932-1936:—

	1932.	1933.	1934.	1935.	1936.
Cases ..	—	—	1	30	49
Deaths ..	—	—	1	22	44

There have been during 1936, 49 cases with 44 deaths giving a fatality rate of 89.8 per cent.

The cases were all confined to the Eastern Province; 48 out of 49 cases occurred in Batticaloa District and one case occurred in Trincomalee District.

There were two outbreaks—the first occurred in March-April and the second in October, 1936. Forty-five cases with 40 deaths occurred in the first outbreak and 4 fatal cases occurred in the second.

The distribution of these cases and deaths by locality is as follows:—

	Cases.	Deaths.
Batticaloa District—		
Kokkodicholai	35	31
Kalmunaikudi / Saintamurutu	6	6
Kattankudi	2	1
Sammanturai	1	1
Manmunai South ..	2	2
Palugamam	1	1
Porativu	1	1
Trincomalee District—		
Kiliveddy	1	1
	49	44

The first outbreak occurred at Manmunai South in the vicinity of Kokkodicholai and Atuchenai. The disease first broke out among cultivators who went to the paddy fields in Manmunai South for reaping harvest. The first case occurred on March 17, 1936, and proved fatal on the same day. Last case occurred on April 17, 1936, and last death on April 18, 1936. The second outbreak occurred in Manmnuai South and Porativu six months after the first outbreak. The disease broke out among cultivators of Natpathuwaddai near Atuchenai. The first case occurred on October 6, 1936, and the last on October 12, 1936.

The exact source of infection could not be definitely traced. In the first outbreak there is reason to believe that the infection had arrived from India from where labourers come periodically for work during harvesting seasons.

The source of infection in the second outbreak which occurred almost exactly at the same spot as the first is probably a carrier in the locality.

The mode of transmission in both outbreaks is considered to have been by contact. No common source of water supply could be incriminated.

All necessary measures and intensive action were taken which helped to prevent further cases and to bring about a speedy termination of the outbreaks.

(3) **Smallpox.**—There were 3 cases of smallpox, all of which proved fatal. Of the 3 cases, 2 were of confluent type and 1 discrete.

These cases occurred in Colombo in three Indian Tamils who arrived freshly from India. The first case was in a person who arrived in Colombo on January 9, 1936, and fell ill on January 11, 1936, and died on January 22, 1936. The second was in a person who arrived on August 1, 1936, fell ill on the same day, and died on August 13, 1936. The third was in a person who arrived on September 30, 1936, fell ill on the same day, and died on October 10, 1936.

(4) **Chickenpox.**—6,760 cases as compared with 5,266 cases in 1935 were reported to the Sanitary Branch during the year with 12 deaths, giving a fatality rate of .18 per cent. Of these cases, 56.5 per cent. occurred in the Western Province, 17.5 per cent. in the Southern Province, 13.3 per cent. in the Central Province, 6.5 per cent. in the Province of Sabaragamuwa, and 6.2 per cent. in the other provinces. On an average 564 cases were reported each month, with the maximum 844 in March and the minimum 379 in June.

The following is a statement of cases by years for the past five years :—

Year.	Cases.	Year.	Cases.
1931 ..	.. 4,324	1934 ..	.. 6,885
1932 ..	.. 6,902	1935 ..	.. 5,266
1933 ..	.. 7,439		

(5) **Diphtheria.**—103 cases as compared with 116 cases in 1935 were reported to the Sanitary Branch during the year with 13 deaths, giving a fatality rate of 12.62 per cent. Of these cases, 76.7 per cent. occurred in the Western Province. All the cases were of the faucial variety. On an average 9 cases were reported monthly, with the maximum 14 in May and the minimum 5 in March.

The following is a statement of cases and deaths by years for the past five years :—

Year.	Cases.	Deaths.	Year.	Cases.	Deaths.
1931 ..	41 ..	12	1934 ..	99 ..	18
1932 ..	61 ..	16	1935 ..	116 ..	14
1933 ..	72 ..	18			

The following table shows the number of cases and deaths in hospitals and total registered deaths from diphtheria for the Island in the past five years :—

	1932.	1933.	1934.	1935.	1936.
Hospital cases	36 ..	60 ..	84 ..	84 ..	84
Hospital deaths	14 ..	21 ..	27 ..	23 ..	20
Total number of deaths for the Island ..	22 ..	30 ..	32 ..	41 ..	33

Of the 84 cases treated, 40 were at the Infectious Diseases Hospital, Angoda, 8 at the Lady Havelock Hospital, 2 at Panadure hospital, 7 at the General Hospital, Colombo, 3 in Badulla, 2 in Trincomalee, 12 in Kandy, 3 in Aranayaka, 1 each in Galle, Matara, Teldeniya, Uda Pussellawa, Karawanella, Chilaw, and Kurunegala. Most of the cases were children.

(6) **Measles.**—2,775 cases as compared with 719 in 1935 were reported to the Sanitary Branch during the year with 2 deaths, giving a fatality rate of .07 per cent. Of the cases, 45.0 per cent. occurred in the Western Province, 41.6 per cent. in the Central Province, 5.6 per cent. in the North-Western Province, and 7.8 per cent. in the other provinces. On an average 231 cases per month have been reported, with the maximum 426 in December and the minimum 63 in February.

The following is a statement of cases by years for the last five years :—

Year.	Cases.	Year.	Cases.
1931	279	1934	5,201
1932	3,700	1935	719
1933	9,101		

(7) **Mumps.**—1,135 cases as compared with 485 in 1935 were reported with 5 deaths. Of these cases, 47.2 per cent. occurred in the Western Province, 16.0 per cent. in the Southern Province, 15.1 per cent. in the Central Province, and 21.7 per cent. in the other provinces. On an average 94 cases were reported monthly, with the maximum 142 in November and the minimum 64 in December.

The following is a statement of cases by years for the past five years :—

Year.	Cases.	Year.	Cases.
1931	199	1934	235
1932	221	1935	485
1933	333		

(8) **Whooping Cough.**—296 cases as compared with 235 cases in 1935 were reported with 21 deaths, giving a fatality rate of 7.09 per cent. Of these cases, 54.0 per cent. occurred in the Western Province, 25.6 per cent. in the Province of Sabaragamuwa, 11.1 per cent. in the North-Western Province, and 9.3 per cent. in the other provinces. The incidence shows a rise in the months of November and December. On an average 25 cases were reported monthly, with the maximum 68 in December and minimum 7 in February.

The following is a statement of cases by years for the past five years :—

Year.	Cases.	Year.	Cases.
1931	166	1934	279
1932	461	1935	235
1933	374		

(9) **Enteric.**—The following table shows the number of cases and deaths in hospitals and the total registered deaths from enteric fever in the Island for the past five years :—

	1932.	1933.	1934.	1935.	1936.
Hospital cases ..	2,791	2,745	2,858	2,387	3,048
Hospital deaths ..	595	606	577	543	630
Total number of deaths for the Island ..	783	794	715	690	773

The actual prevalence of the disease cannot be judged from hospital admissions since many cases resort to ayurvedic treatment and the majority of cases probably are not notified. The number of registered deaths does not indicate the actual mortality from this disease, as some deaths from enteric are undoubtedly included amongst those reported as due to pyrexia. There were 14,520 deaths due to pyrexia in 1936, as against 22,507 in 1935.

2,503 cases were notified in 1936 to the Sanitary Branch of this department as compared with 1,991 in 1935, with 449 deaths, giving a fatality rate of 17.8 per cent. Of these cases, 36.2 per cent. occurred in the Western Province, 27.8 per cent. in the Southern Province, 13.0 per cent. in the Central Province, 10.9 per cent. in the Province of Sabaragamuwa, and 12.1 per cent. in the other provinces. On an average 209 cases were notified per month. Investigation of outbreaks points to the existence of carriers and contact infection. The number of anti-typhoid inoculations administered are as follows :—

1st dose	8,394	2nd dose ..	6,454

The following is a statement of enteric cases reported, by years, for the past five years :—

Year.	Cases.	Year.	Cases.
1931	2,317	1934	2,785
1932	2,510	1935	1,991
1933	2,638		

(10) **Dysentery.**—The following table shows the number of cases and deaths in hospitals and the total registered deaths from dysentery for the Island in the past five years :—

	1932.	1933.	1934.	1935.	1936.
Hospital cases	5,599	5,299	5,804	7,858	5,179
Hospital deaths	638	663	785	1,429	624
Total number of deaths registered for the Island	2,178	1,886	2,279	6,175	2,217

3,333 cases or 64.3 per cent. of the total number of cases were stated to be amoebic and 1,067 cases or 20.6 per cent. bacillary. These figures, however, are not of great value since the distinction was often made on clinical grounds. Only a small percentage of the cases were submitted to complete laboratory investigation and among them the bacillary type greatly preponderated (*vide* Section IX.). The mortality rates of amoebic dysentery were 11.7 per cent. and of bacillary 10.7 per cent.

The following provinces contributed the majority of the hospital cases :—

Western Province 1,819 cases with 237 deaths.
North-Western Province 444 cases with 71 deaths.
Central Province 521 cases with 76 deaths.
Province of Sabaragamuwa 530 cases with 81 deaths.
Northern Province 645 cases with 42 deaths.
Southern Province 572 cases with 57 deaths.

28,631 out-patients were treated for this disease during the year, as against 39,818 during 1935. The distribution of out-patient cases is as follows :—

	1934.	1935.	1936.
Western Province	3,230	4,919	4,334
Central Province	5,364	9,165	4,095
Southern Province	2,924	2,532	3,064
Eastern Province	4,264	3,885	4,407
Northern Province	4,997	4,622	4,138
North-Western Province	4,821	6,381	3,803
North-Central Province	5,116	3,038	1,895
Province of Uva	1,664	1,380	1,059
Province of Sabaragamuwa	1,989	3,896	1,836

These figures show an increase of the disease in only two provinces as compared with those of the previous year.

3,060 cases as compared with 5,170 in 1935 were notified to the Sanitary Branch of the department during the year with 315 deaths, giving a fatality rate of 10.29 per cent. Of these cases, 41.5 per cent. occurred in the Western Province, 21.7 per cent. in the Southern Province, 12.0 per cent. in the Province of Sabaragamuwa, 7.1 per cent. in the Eastern Province, and 17.7 per cent. in the other provinces. On an average 255 cases were reported monthly—the largest number 640 in December and the smallest 120 in May. The dysentery that occurred was largely of the bacillary type and investigations carried out point to carriers and contacts as the chief factors in the spread of infection.

The following is a statement of cases reported, by years, for the past five years :—

Year.	Cases.	Year.	Cases.
1931	2,961	1934	5,049
1932	2,729	1935	5,170
1933	2,559		

(11) **Influenza.**—The following table shows the number of cases and deaths in hospitals and total registered deaths for the Island in the past five years :—

	1932.	1933.	1934.	1935.	1936.
Number of cases treated at dispensaries	142,556	192,413	216,731	159,379	177,699
Hospital cases	5,059	6,762	9,749	6,103	6,806
Hospital deaths	111	104	163	157	139
Total number of deaths for the Island	1,602	1,920	2,305	1,917	1,583

(12) **Tuberculosis of the Lungs.**—The following table shows a comparison between the figures for 1936 and the figures for the previous four years:—

	1932.	1933.	1934.	1935.	1936
Hospital cases	4,508	4,229	4,278	4,851	4,449
Hospital deaths	1,087	1,108	1,126	1,382	1,054
Total number of deaths registered for the Island	2,966	3,118	3,094	3,387	3,167

Four special institutions—the Anti-Tuberculosis Institute, Colombo (out-door), Kandana Sanatorium, Western Province, and the Kankesanturai Sanatorium, Northern Province, for early cases, and the Ragama Tuberculosis Hospital, Western Province, for moderately advanced cases, are maintained to deal with this disease. Details of work at these institutions are given in Section VI. The number of cases treated at the out-door dispensaries in the Island was 2,708.

(13) **Leprosy.**—During the year 1,253 cases with 74 deaths, as against 1,261 cases with 97 deaths in 1935, were treated at Government hospitals including the two Asylums which are maintained in the Island for the segregation of lepers under the Leper Ordinance, No. 4 of 1901. A report on these two asylums is given in Section VII.

Leprosy Survey.—During the early part of the year the survey work was mainly confined to the follow-up-work in Galle District together with the work in connection with the visit of Dr. H. W. Wada, Medical Director, Culion Leper Colony, Philippine Islands, who was in Ceylon from February 6 to 13 and May 10 to 27, 1936, carrying out a clinical, bacteriological, and pathological study of 60 cases of leprosy with special reference to tuberculoid leprosy. In this study the Survey Medical Officers associated themselves with the doctor and gave him all necessary data.

From June, 1936, the survey work was extended to Talpe pattu of the Galle District, Matara, and Hambantota Districts, thus completing the survey of the Southern Province.

During the month of September the officers visited the Eastern Province and reviewed the work of the Batticaloa District and detected 20 cases, showing the value of re-visiting endemic areas and carrying out further surveys.

Dr. Cochrane's Report of his second visit of investigations of leprosy work was published in May, 1936.

Dr. Pampana, a member of the health section of the League of Nations, visited the Central Clinic at Maradana on August 1, 1936, and was interested in the thoroughly revised policy relating to leprosy in Ceylon.

The leprosy survey staff consisted of two Medical Officers, four apothecaries, and one orderly.

On the recommendation made by Dr. Cochrane in his second report, three more apothecaries were appointed for leprosy work and were trained in the Central Leprosy Clinic and in the field in all branches of anti-leprosy work and at our present stations in the following areas:—

Western Province.—Two apothecaries stationed at Colombo.
Southern Province.—One apothecary stationed at Galle.
Eastern Province.—One apothecary stationed at Kalmunai.

The total area surveyed during the year was about 1,800 square miles in extent with a population of 490,000. This included the following health areas and Chief Headmen's Division:—

Health Area.	Chief Headmen's Divisions.
1. M. O. H., Galle District	Talpe pattu, Hinidum pattu, area round Elpitiya and Udugama
2. M. O. H., Matara District	Weligam korale, Morawak korale, Kandaboda and Gangaboda pattu and part of Wellaboda pattu
3. M. O. H., Matara Health Unit	Four Gravets and part of Wellaboda pattu
4. Matara U. D. C.	—
5. M. O. H., Tangalla	Giruwa pattu west and east and Magam pattu
6. Follow-up-work in the Eastern and Western Provinces.	

Six new treatment centres were opened during the year in addition to the already existing 10, thus making a total of 16 clinics.

The 6 clinics are stationed at—

1. Bentota Dispensary—Friday mornings.
2. Balapitiya Hospital—Friday mornings.
3. Galle out-door Dispensary—Thursday afternoons.
4. Weligama Dispensary—Wednesday afternoons.
5. Kadawata Dispensary—Thursday mornings.
6. Wadduwa Dispensary—Friday mornings.

In the areas surveyed all officers were trained in the methods of early diagnosis and treatment of leprosy. Special propaganda work was carried on in the schools and infected villages.

During the year 33,141 children in 183 schools were examined and 43 cases were detected.

District.	No. of Schools.	Pupils.	Cases.
1. Galle	24 ..	4,723 ..	3
2. Matara	86 ..	14,795 ..	30
3. Matara Health Unit	29 ..	6,642 ..	6
4. Matara U. D. C.	10 ..	2,415 ..	1
5. Hambantota	34 ..	4,566 ..	3
	183	33,141	43

At the end of 1935 there were 938 cases outside the Asylum. In 1936, the survey detected 420 cases, which made a total of 1,358. Of these, 175 cases were segregated as open cutaneous and infective, 14 left the Island and 6 have died. This leaves a balance of 1,163 and with the 94 cases discharged from the two asylums, makes a total of 1,257 treated and observed at the clinics and homes of cases of leprosy.

Of the above 1,257 cases, 37 are cutaneous and open, 1,008 are neural or closed, 212 are cases discharged on parole as bacteriologically negative. Of these, 397 were below 14 years of age and 860 above 14 years. 878 were males and 397 were females. These cases according to race are 981 Sinhalese, 80 Ceylon Tamils, 146 Indian Tamils, 33 Moors, 7 Malays, and 10 Burghers.

Statement of New Cases, Admissions, Discharges, and Deaths in 1936 by Provinces.

Province.	New Cases.	Segre-gated.	Discharged on Parole.	Left for India.	Deaths.
Western	142 ..	68 ..	35 ..	14 ..	32
Southern	175 ..	40 ..	9 ..	— ..	17
Eastern	20 ..	6 ..	19 ..	— ..	13
Central	33 ..	26 ..	11 ..	— ..	3
Sabaragamuwa ..	17 ..	13 ..	7 ..	— ..	6
Uva	8 ..	8 ..	7 ..	— ..	1
North-Western ..	10 ..	5 ..	1 ..	— ..	1
Northern	12 ..	7 ..	5 ..	— ..	4
North-Central ..	3 ..	2 ..	— ..	— ..	—
Total ..	420	175	94	14	77

Statement by Provinces of total cases outside the Asylums to end of 1936.

Province.	1935.	1936.
Western	645 ..	734
Southern	144 ..	288
Eastern	75 ..	108
Central	26 ..	44
Sabaragamuwa	37 ..	48
Uva	3 ..	10
North-Western	6 ..	12
Northern	2 ..	12
North-Central	— ..	1
Total ..	938	1,257

During the year, 175 cases were admitted into Hendala and Mantivu Asylums. Ninety-four cases were discharged on parole and 71 cases died. 950 cases remained in the two asylums at the end of 1936.

Of this number, 151 were Indians and 799 Ceylonese—181 females and 769 males.

Statement of Cases in the two Asylums at end of 1936.

Province.	Hendala.	Mantivu.	Total.
Western	398	9	407
Southern	183	5	188
Eastern	11	75	86
Central	16	—	16
Sabaragamuwa ..	30	3	33
Uva	2	23	25
North-Western ..	19	—	19
Northern ..	3	15	18
North-Central ..	1	6	7
Indians	102	49	151
Total ..	765	185	950

Statement showing Total Cases for the Island at end of 1936.

Province.	Segregated.	Outside.	Total.
Western	407	734	1,141
Southern	188	288	476
Eastern	86	108	194
Central	16	44	60
Sabaragamuwa ..	33	48	81
Uva	25	10	35
North-Western ..	19	12	31
Northern	18	12	30
North-Central ..	7	1	8
Indians	151	—	151
Total ..	950	1,257	2,207

The total number of cases in Ceylon at end of 1936 was 2,207, as compared with 1,882 at the end of the previous year, showing an increase of 325 cases.

Of the 2,207 cases—

		Per Cent.
1,910 Ceylonese ...	... 297 Indians ...	15
1,647 males ...	... 560 females ...	34
1,220 closed cases ...	... 987 open cases ...	45
1,792 adults ...	... 415 under 14 years ...	23

(14) **Parangi (Yaws).**—The following table shows the number of cases and deaths in hospitals and total registered deaths for the Island in the past five years :—

	1932.	1933.	1934.	1935.	1936.
Hospital cases ..	1,352	1,043	795	986	956
Hospital deaths ..	4	3	2	3	4
Number of cases treated at dispensaries ..	23,208	18,368	10,366	9,385	10,666
Total number of deaths for the Island	9	5	8	9	14

Owing to the decrease in the number of cases the Itinerating Medical Officers who numbered 13 in 1930 were further reduced from 4 to 2 from 1933.

3.—VACCINATION.

The total number of primary vaccination performed during the year under review was 145,108; of these, 129,201 were successful and 1,882 failures. In 14,025 cases the results were not determined. The percentage of successful primary vaccinations was 89.0.

Vaccination is carried out througout the year by trained male and female vaccinators. The former vaccinate in towns, villages, and estates periodically according to a fixed programme; the latter work in towns and villages and vaccinate Muslim women and children.

A vaccine station for the preparation of calf lymph is maintained by Government (*vide* Section IX. of this report).

The following table gives the number of vaccinations performed, according to provinces, during the year 1936:—

Provinces.	Total.	Successful.	Failures.	Not determined.
Western	37,523	33,048	406	4,069
Southern	23,751	21,819	300	1,632
Sabaragamuwa	19,940	17,047	298	2,595
North-Western	19,248	16,971	349	1,928
Central	15,417	13,986	92	1,339
Uva	9,701	9,093	31	577
Northern	8,910	7,464	146	1,300
Eastern	6,957	6,300	173	484
North-Central	3,661	3,473	87	101
Total	145,108	129,201	1,882	14,025

Provinces.	Primary Vaccination.	Secondary Vaccination.	Total.
Western	37,523	1,842	39,365
Southern	23,751	621	24,372
Sabaragamuwa	19,940	142	20,082
North-Western	19,248	13	19,261
Central	15,417	32	15,449
Uva	9,701	20	9,721
Northern	8,910	20	8,930
Eastern	6,957	13	6,970
North-Central	3,661	566	4,227
Total	145,108	3,269	148,377

B.—VITAL STATISTICS.

The following tables give the more important vital statistics for Ceylon:—

Table I.

Population, Births, Deaths, Immigration, and Infant Mortality since 1871.

	Average Annual Estimated Population (Mid-year Estimates for 1926–1936).	Average Annual Number of Births registered (Actual Numbers for 1926–1936).	Average Annual Number of Deaths registered (Actual Numbers for 1926–1936).	Excess of Registered Births over Deaths.	Excess of Immigrants over Emigrants.	Average Annual Birth Rate per 1,000 (Annual Rates for 1926–1936)	Average Annual Death Rate per 1,000 (Annual Rates for 1926–1936).	Average Annual Infant Mortality, *i.e.*, Deaths of Children under 1 Year of Age per 1,000 Births (Annual Rates for 1926–1936).
1871–1880	2,584,780	70,815	58,836	11,979	23,862	27·4	22·4	—
1881–1890	2,888,104	83,664	69,238	4,426	10,398	28·9	24·0	158
1891–1900	3,295,279	112,204	89,664	22,540	34,070	34·1	27·2	169
1901–1910	3,838,750	145,962	110,347	35,615	17,735	38·0	28·7	180
1911–1920	4,311,328	164,807	132,866	31,941	9,225	38·2	30·8	196
1921–1930	4,920,028	194,611	128,916	65,695	14,880	39·5	26·2	182
1926	4,928,122	206,888	124,884	82,004	732*	42·0	25·3	174
1927	5,009,394	205,469	113,003	92,466	11,194*	41·0	22·6	160
1928	5,090,666	213,308	132,334	80,974	298	41·9	26·0	177
1929	5,171,938	198,005	135,274	62,731	18,541	38·3	26·1	187
1930	5,253,210	205,106	133,708	71,398	9,874	39·0	25·4	175
1931	5,325,354	199,170	117,453	81,717	31,581*	37·4	22·1	158
1932	5,386,106	199,370	110,650	88,720	28,837*	37·0	20·5	162
1933	5,514,516	209,032	114,690	94,342	58,170*	38·6	21·2	157
1934	5,551,623	206,512	127,069	79,442	94,534	37·2	22·9	173
1935	5,598,467	192,755	204,823	—	7,861*	34·4	36·6	263
1936	5,631,000	192,060	123,039	69,021	7,965*	34·1	21·8	166

* Excess of emigrants over immigrants.

TABLE II.

Vital Statistics by Provinces.

Province.	Population, 1936.	Area in Square miles.	Number of Births, 1936.	Number of Deaths, 1936.	Birth Rate per 1,000 of the Population, 1936.	Death Rate per 1,000 of the Population, 1936.	Infant Mortality Rate per 1,000 Births registered, 1936.
Western	1,522,000	1,432	46,076	26,357	30·3	17·3	123
Central	1,059,000	2,290	35,171	20,784	33·2	19·6	180
Southern	809,000	2,146	31,276	18,740	38·7	23·2	148
Northern	404,000	3,429	13,768	10,987	34·1	27·2	199
Eastern	219,000	3,840	8,598	9,169	39·3	42·6	259
North-Western	565,000	3,016	19,632	13,806	34·8	24·4	214
North-Central	96,000	4,009	4,971	4,234	51·8	44·1	273
Uva	334,000	3,277	12,835	8,158	38·5	24·4	161
Sabaragamuwa	623,000	1,893	19,733	10,804	31·7	17·3	132

TABLE III.

Vital Statistics by Urban and Rural Areas.

	Population Estimated to the Middle of 1936.	Births. Number.	Births. Rate.	Deaths. Number.	Deaths. Rate.	Maternal Deaths. Number.	Maternal Deaths. Rate per 1,000 Live Births.	Infant Deaths. Number.	Infant Deaths. Rate per 1,000 Births.
Urban residents and non-residents in 36 towns) areas	762 700	28,690	37·6	24,127	31·6	917	32·0	4,614	161
Corrected for residents only	—	*20,993*	*27·5*	*15,365*	*20·1*	—	—	*3,615*	*172*
Rural areas	4,868,500	163,370	33·5	98,912	20·3	3,241	19·9	27,175	167
Whole Island	5,631,200	192,060	34·1	123,039	21·8	4,158	21·6	31,789	166

Stillbirths are registered only in the urban areas. During 1936 in the 36 prineipal towns, there were 2,221 stillbirths (ineluding 1 ease in Kalutara in whieh the sex was not distinguishable), giving a rate of 77 per 1,000 live births.

TABLE IV.

Vital Statistics: (A) by Races and (B) by Communities.

Races and Communities.	Estimated Population at Mid-year, 1936.	Births. Number registered, 1936.	Births. Rate per 1,000 Persons living, 1936.	Deaths. Number registered, 1936.	Deaths. Rate per 1,000 Persons living, 1936.	Infant Deaths. Number registered, 1936.	Infant Deaths. Rate per 1,000 Births registered, 1936.
(A) *Races*—							
1. All raees	5,631,200	192,060	34·1	123,039	21·8	31,789	166
2. Europeans	10,200	124	12·2	71	7·0	4	32
3. Burghers and Eurasians	36,800	986	26·8	551	15·0	110	112
4. Sinhalese	3,775,600	130,967	34·7	78,579	20·8	19,785	151
5. Tamils	1,402,000	46,942	33·5	32,798	23·4	9,042	193
6. Moors	356,700	11,490	32·2	9,990	28·0	2,592	226
7. Malays	16,800	787	46·8	500	29·8	135	172
8. Others	33,100	764	23·1	550	16·6	121	158
(B) *Communities*—							
1. Ceylonese (*i.e.*, total population less Europeans and Indians)	4,958,800	166,755	33·6	110,077	22·2	27,449	165
2. European (including officials)	10,200	124	12·2	71	7·0	4	32
3. Indian immigrant population on estates	662,200	25,181	37·9	12,891	19·4	4,336	172

Indian Population on Estates.—Section 2 of the Medical Wants Ordinance, No. 9 of 1912, defines an "Estate" as "any estate in which labourers are employed having ten acres of land actually cultivated in tea, rubber, coffee, cacoa, cardamoms, camphor, pepper, or cinchona". The Indian population of the tea and rubber estates had declined greatly during the years 1929 to 1933 on account of the depression in trade, but during 1934 and 1935 the depression began to lift and considerable recruitment of labour from India took place.

Table V.

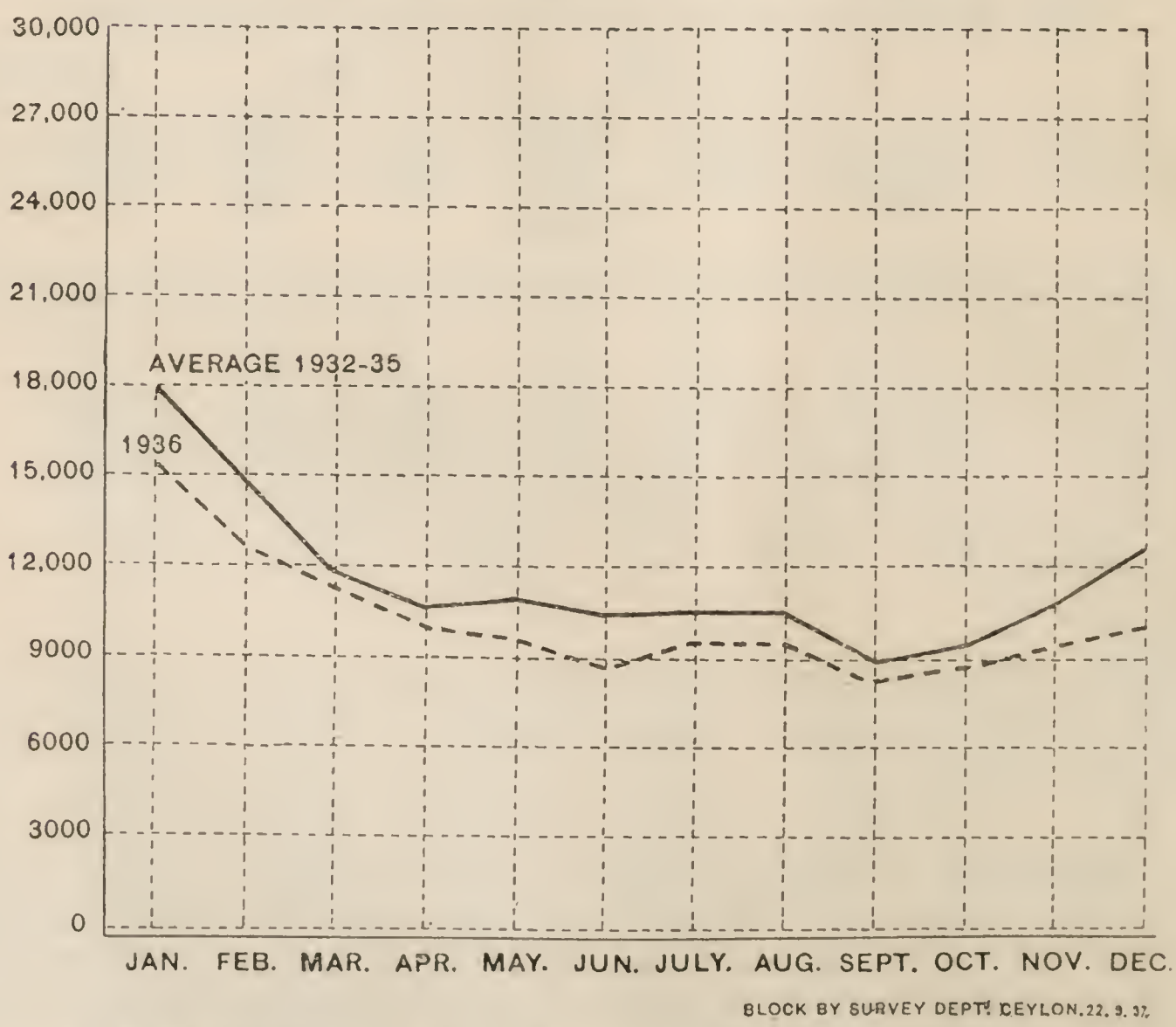
Vital Statistics of Indian Population on Estates for the past Ten Years.

	Mean Population.	Births. Number.	Births. Rate.	Deaths. Number.	Deaths. Rate.	Infant Deaths. Number.	Infant Deaths. Rate.	Immigrants.	Emigrants.
1926	638,847	27,515	43·1	19,168	30·0	5,751	209	101,746	63,707
1927	691,855	24,079	34·8	19,478	28·2	5,489	228	159,398	89,783
1928	717,480	24,767	34·5	19,823	27·6	5,215	211	133,712	97,088
1929	731,177	25,064	34·3	18,382	25·1	5,338	213	105,095	104,411
1930	740,863	24,813	33·5	16,346	22·1	4,804	194	91,422	106,190
1931	685,527	23,441	34·2	14,231	20·8	4,303	184	68,337	91,573
1932	664,322	24,324	36·6	12,431	18·7	4,576	188	50,869	72,495
1933	618,314	24,335	39·4	11,688	18·9	4,397	181	32,898	88,969
1934	650,564	23,346	35·9	13,709	21·1	4,666	200	140,607	54,785
1935	679,201	25,759	37·9	18,133	26·7	5,094	198	43,018	43,036
1936	665,000	25,181	37·9	12,891	19·4	4,336	172	40,803	41,721

Table VI.

Number of Deaths for the Whole Island each Month for the past Five Years.

Month.	Number of Deaths, 1932.	Number of Deaths, 1933.	Number of Deaths, 1934.	Number of Deaths, 1935.	Average Monthly Deaths, 1932–35.	Number of Deaths, 1936.
January	11,907	13,005	11,541	36,251	18,176	15,330
February	10,964	11,353	9,964	26,550	14,708	12,708
March	9,228	10,050	9,105	19,065	11,862	11,251
April	8,439	8,276	8,786	15,928	10,357	9,968
May	8,614	8,906	9,116	16,688	10,831	9,450
June	8,248	8,679	8,739	15,450	10,279	8,961
July	8,135	9,210	9,476	16,242	10,766	9,366
August	8,785	9,274	9,967	14,561	10,647	9,538
September	7,692	8,524	8,540	10,888	8,911	8,277
October	8,450	8,917	9,910	10,913	9,547	8,770
November	9,680	9,447	12,198	10,872	10,549	9,344
December	10,507	9,049	19,728	11,415	12,675	10,076
Total	110,649	114,690	127,070	204,823	139,398	123,039



Causation of Deaths.—The registration of births and deaths is compulsory throughout the Island, but the causes of deaths given cannot be accepted as completely accurate since in the rural districts deaths are not usually medically

certified and the majority of the registering officers are not medical men. The Registrar-General compiles separately the vital statistics of the 36 principal towns in Ceylon and these figures are more reliable as regards the causes of deaths, since most of them are based on the certificates of medical practitioners.

TABLE VII.

Causes and Numbers of Deaths in the 36 Principal Towns for the past Three Years.

Causes.	Number of Deaths. 1934.	1935.	1936.
I.—*Infant Mortality*	4,923 ..	5,473 ..	4,614
(A) One Week and under.			
1. Prematurity	776 ..	781 ..	686
2. Debility	762 ..	877 ..	737
3. Convulsions	161 ..	175 ..	170
4. Tetanus	15 ..	22 ..	15
5. Bronchitis	1 ..	4 ..	4
6. Pneumonia	7 ..	6 ..	3
7. Other causes	96 ..	106 ..	94
(B) Over One Week and under One Year.			
1. Prematurity	128 ..	142 ..	96
2. Debility	758 ..	837 ..	629
3. Convulsions	481 ..	493 ..	444
4. Diarrhoea	87 ..	95 ..	89
5. Enteritis	396 ..	330 ..	411
6. Tetanus	11 ..	12 ..	12
7. Bronchitis	112 ..	110 ..	125
8. Pneumonia	515 ..	461 ..	475
9. Syphilis	46 ..	43 ..	21
10. Other causes	571 ..	979 ..	603
II.—*General Mortality (One Year and over)* ..	18,735 ..	26,678 ..	19,513
1. Plague	19 ..	35 ..	28
2. Smallpox	1 ..	3 ..	1
3. Chickenpox	1 ..	— ..	2
4. Measles	2 ..	3 ..	10
5. Influenza	527 ..	353 ..	309
6. Enteric fever	491 ..	509 ..	520
7. Malaria and malarial cachexia ..	1,148 ..	5,696 ..	2,112
8. Cholera	— ..	3 ..	1
9. Diarrhoea	602 ..	1,072 ..	630
10. Enteritis	663 ..	969 ..	702
11. Dysentery	665 ..	1,032 ..	487
12. Ankylostomiasis	765 ..	959 ..	637
13. Diseases due to other intestinal parasites	637 ..	571 ..	508
14. Cancer	240 ..	279 ..	273
15. Pulmonary tuberculosis ..	1,373 ..	1,234 ..	1,332
16. Other tuberculous diseases ..	113 ..	110 ..	106
17. Anaemia	64 ..	118 ..	61
18. Diabetes Mellitus	243 ..	256 ..	266
19. Paralysis	493 ..	388 ..	436
20. Convulsions	344 ..	341 ..	242
21. Tetanus	112 ..	120 ..	134
22. Heart disease	774 ..	876 ..	903
23. Bronchitis	374 ..	375 ..	394
24. Pneumonia	2,826 ..	3,753 ..	3,095
25. Other diseases of the respiratory system	234 ..	273 ..	263
26. Bright's disease and nephritis ..	792 ..	1,035 ..	746
27. Puerperal eclampsia	105 ..	96 ..	101
28. Puerperal septicaemia	428 ..	435 ..	428
29. Accidents of childbirth ..	338 ..	440 ..	388
30. Accidents and negligence ..	457 ..	556 ..	533
31. Homicide	116 ..	91 ..	117
32. Suicide	58 ..	82 ..	77
33. Execution	25 ..	53 ..	41
34. All other causes	3,705 ..	4,562 ..	3,630
Total, all causes ..	23,658	32,151	24,127

Table VIII.

Deaths according to the Class of Diseases for the whole Island during the past Two Years.

I.—Infectious and parasitic diseases—	1935.	1936.
(*a*) Infectious and parasitic diseases (less tuberculous and venereal diseases)	66,047	18,744
(*b*) Tuberculous diseases	3,848	3,558
(*c*) Venereal diseases	188	132
II.—Cancer and other tumours	589	580
III.—Rheumatic diseases, nutritional diseases, diseases of the endocrine glands and other general diseases ..	8,322	6,365
IV.—Diseases of the blood and blood-making organs ..	2,884	2,164
V.—Chronic poisonings and intoxications	11	5
VI.—Diseases of the nervous system and of the organs of special sense	20,348	14,530
VII.—Diseases of the circulatory system	2,070	1,921
VIII.—Diseases of the respiratory system	16,656	14,471
IX.—Diseases of the digestive system	12,807	8,792
X.—Non-venereal diseases of the genito-urinary system and annexa	2,549	1,848
XI.—Diseases of pregnancy, childbirth, and the puerperal state	5,165	4,158
XII.—Diseases of the skin and cellular tissue ..	14,453	9,463
XIII.—Diseases of the bones and organs of locomotion ..	38	30
XIV.—Congenital malformations	39	51
XV.—Diseases of early infancy	11,593	9,239
XVI.—Old age	7,577	6,175
XVII.—Violent and accidental deaths	2,979	3,050
XVIII.—Ill-defined causes and death	26,661	17,763

Table IX.

Deaths due to Diseases of Special Interest in Ceylon for the whole Population during the past Five Years.

		1932.	1933.	1934.	1935.	1936.
1.	Dysentery ..	2,178	1,886	2,279	6,175	2,217
2.	Pulmonary tuberculosis ..	2,966	3,118	3,094	3,387	3,167
3.	Infantile convulsions ..	10,867	11,666	12,939	16,591	11,323
4.	Diarrhoea ..	5,978	6,609	8,047	11,146	7,123
5.	Pneumonia ..	6,307	6,900	8,398	11,431	9,668
6.	Ankylostomiasis ..	1,955	1,877	2,118	2,644	1,839
7.	Dropsy	1,819	2,051	2,020	2,381	2,216
8.	Anaemia ..	1,805	2,217	2,244	2,645	1,905
9.	Intestinal parasites ..	3,562	3,689	4,372	4,832	3,077
10.	Puerperal septicaemia ..	1,328	1,336	1,461	1,647	1,527
11.	Malaria	1,681	1,409	2,333	47,317	7,620
12.	Enteric fever ..	783	794	715	690	773
13.	Rickets	4,300	4,696	4,878	5,133	3,599
14.	Tetanus	270	248	266	286	285
15.	Rabies	52	56	58	85	64
16.	Cholera	1*	1*	—	22	24
17.	Influenza.. ..	1,602	1,920	2,305	1,917	1,583
18.	Leprosy	96	89	104	98	69
19.	Plague	70	53	32	57	44
20.	Scarlet fever ..	—	—	—	—	—
21.	Anthrax	1	—	1	1	4
22.	Smallpox.. ..	4	87	10	20	4
23.	Diphtheria ..	22	30	32	41	33
24.	Parangi	9	5	8	9	14
25.	Pyrexia	14,514	13,776	15,467	22,507	14,520

* These were cases of acute choleraic diarrhoea.

The above table shows that, excluding malaria, pyrexia and infantile convulsions continue to be the two principal causes of death followed by pneumonia and diarrhoea.

TABLE X.

Causes and Numbers of Deaths among the Indian Population on Estates for the past Five Years.

		1932.	1933.	1934.	1935.	1936.
1.	Dysentery ..	445	330	491	683	337
2.	Debility	2,558	2,513	2,620	2,840	2,430
3.	Diarrhoea and enteritis ..	663	523	626	897	601
4.	Pneumonia ..	1,422	1,508	2,242	2,360	1,925
5.	Ankylostomiasis ..	878	709	835	1,091	719
6.	Infantile convulsions ..	967	889	963	1,174	783
7.	Dropsy	32	29	33	52	38
8.	Pulmonary tuberculosis ..	254	236	230	217	227
9.	Anaemia ..	33	24	17	45	23
10.	Other diseases ..	5,179	4,927	5,652	8,773	5,810

III.—HYGIENE AND SANITATION.

A.—GENERAL REVIEW OF WORK DONE AND PROGRESS MADE.

Public health work made steady progress during the year, the latter part of which saw the launching of the malaria control and health scheme. This scheme has for its object the carrying out of health work on health unit lines paying special attention to malaria which is made an integral part of general health work. The programme is to take up the whole of the Island progressively, and when the work is fully organized and functioning it will no doubt have a marked effect on the improvement of the health of the people.

General sanitation continues to be satisfactory in urban and rural areas. The carrying out of work by co-operation through health leagues has become the policy of the department and good progress has been made.

The control of soil pollution through construction, maintenance, and the use of sanitary latrines is the chief work of Sanitary Assistants. The progress of this work is dependent on the provision of cement concrete squatting plates which are the only type of platforms that are recognized. During the year 347 bucket latrines in urban areas, 13,639 deep pit latrines, 312 bored hole latrines, and 263 mound latrines in rural areas were constructed, making a total of 17,901 latrines as compared with 9,562 latrines during 1935.

The provision of protected water supplies in urban and rural areas is a matter that needs most attention. Although the matter is before those concerned with their provision, still a large portion of the population lacks a wholesome supply of good drinking water. During the year 119 new public wells were constructed, as compared with 155 in 1935; and 1,667 wells were improved as compared with 1,569 in 1935.

The control of communicable diseases continues to receive close attention. With plague endemic in Colombo, infection from there is carried from time to time to towns in the interior of the Island. During the year there were outbreaks of the disease at Anuradhapura and Hatton due to infection conveyed there in bags of rice. Anuradhapura, although a town in the low-country, has had the misfortune to harbour the cheopis flea in consequence of which plague was produced. Hatton is a town up-country where the cheopis is prevalent. Infection from Hatton also spread to Maskeliya. The enforcement of the anti-plague regulations is receiving more attention on the part of those concerned and towns are beginning to provide grain stores and approved rice bins for the storage of rice in addition to the enforcement of other requirements. The introduction of fresh infection from outside into Colombo is being dealt with by cyanide fumigation in barges of all grain and other merchandise liable to convey infection from plague-infected ports. The work commenced in September and is being efficiently carried out.

Diphtheria appears to be on the increase and a study is being made of their incidence.

Maternity and child welfare work continues to receive popular support. The number of centres at which work is carried out on approved lines, the number of clinics held and attendance at them, show a steady increase. The work was carried out at 77 centres, 4,543 clinics were held with a total attendance of 17,393 expectant mothers, 29,563 infants, and 18,611 pre-school children. The demand

for more work cannot be adequately met for want of a sufficient number of public health nurses. The conduct of this work in health units is beginning to show encouraging results in the diminution of infant maternal mortality.

School health work was carried out during the year with the full available staff. Two more Medical Officers were appointed during the year for school health work for the Panadure Totamune Health Unit and Matara Gravets and Wellaboda Pattu Health Unit. An additional trained public health nurse was appointed to the School Medical Officer of Galle. During the year 52,629 school children were medically examined, 73,757 defects were found in them and 21,979 were corrected. Provision has been made for dental treatment by nurses available to areas outside Colombo. The interest shown in school health education continues to be maintained through the initiative of Medical Officers of Health and School Medical Officers. A special syllabus on health education including practical work was provided for teachers in training schools, the training of whom is undertaken by School Medical Officers and Medical Officers of Health. The Education Department has undertaken the giving of a mid-day meal in schools in certain necessitous areas out of funds provided by the State Council.

The Hookworm Campaign made satisfactory progress during the year. Six additional qualified apothecaries were appointed as hookworm dispensers, in accordance with the policy to employ trained apothecaries in the place of hookworm dispensers. During the year a total of 1,855,572 treatments were given, as compared with 1,401,962 in 1935.

The Leprosy Survey has completed the Eastern, Western, and Southern Provinces and work has been organized in them.

Health work under Urban District Councils is carried out satisfactorily. Two of them continued to employ part-time private practitioners as their Medical Officers of Health. The two Urban District Councils which had no Medical Officers of Health at all have come into the scheme of health unit work which is in operation in the area surrounding the town. There is a tendency in one or two other Urban District Council areas to utilize the services of the Medical Officer of Health in a purely advisory capacity in spite of the executive authority he has been granted by the Urban District Councils concerned. This is neither satisfactory nor in the interests of the areas concerned.

Health Unit work which is in operation in 11 areas has functioned satisfactorily. From its adoption for the Malaria Control Scheme it is clear that the health unit type of work has received its well merited recognition.

1.—PREVENTIVE MEASURES.

(*a*) Mosquito or Insect-borne Diseases.

(1) **Malaria.**—Malaria is the most prevalent disease in the Island. The hospital admissions for the disease was 73,192 cases in 1936, as against 161,313 in the previous year. The cases treated at the dispensaries and out-patients' departments of hospitals numbered 2,873,436 in 1936, as against 5,293,468 in 1935. There were 2,030 deaths in hospitals from malaria in 1936, giving a death rate of 2.8 per cent. as contrasted with 5,340 deaths with a rate of 3.3 per cent. in the previous year.

The number of malaria cases treated annually in hospitals and dispensaries during the last ten years is as follows:—

Year.	Cases treated in Hospitals.	Percentage of the Total Number of Patients treated in the Hospitals.	Cases treated in Dispensaries.	Percentage of the Total Number of Patients treated in the Dispensaries.
1927 ..	25,146 ..	12·5 ..	865,594 ..	31·4
1928 ..	44,356 ..	19·7 ..	1,542,029 ..	44·2
1929 ..	37,591 ..	17·8 ..	1,629,586 ..	44·6
1930 ..	36,901 ..	18·0 ..	1,722,210 ..	45·2
1931 ..	27,714 ..	14·4 ..	1,419,807 ..	38·2
1932 ..	32,696 ..	15·7 ..	1,506,194 ..	38·0
1933 ..	23,101 ..	11·1 ..	1,199,075 ..	31·8
1934 ..	41,551 ..	16·5 ..	2,293,224 ..	44·5
1935 ..	161,313 ..	40·8 ..	5,293,468 ..	65·4
1936 ..	73,192 ..	22·5 ..	2,873,463 ..	47·7

The following table shows the hospital admissions and deaths on account of malaria in the different provinces for the past three years:—

	1934.		1935.		1936.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
General Hospital, Colombo ..	1,978	122	8,664	380	5,775	229
Western Province ..	4,306	111	22,080	728	7,842	262
Central Province ..	7,927	177	52,997	1,590	15,594	293
Northern Province ..	2,327	49	3,715	79	4,404	117
Eastern Province ..	973	11	1,798	34	2,964	41
Southern Province ..	3,574	97	7,959	203	7,411	189
North-Western Province ..	4,795	159	14,484	983	8,712	319
North-Central Province ..	2,124	39	3,660	114	3,858	194
Province of Uva ..	5,371	56	13,001	208	7,210	104
Province of Sabaragamuwa ..	8,176	167	32,955	1,021	9,422	282
Total ..	41,551	988	161,313	5,390	73,192	2,030

4,557,725 five-grain tablets and 25,855 pounds of quinine were issued free through various agencies for curative and preventive purposes.

Anti-Malaria Campaigns.—The same anti-malarial measures as in 1936 were carried out in the various centres of work, details of which are given below:—

Anuradhapura.—The year was the fourteenth year of anti-malaria activities in this town.

The staff consisted of 1 Medical Officer, 2 Sanitary Inspectors, 1 overseer, 3 kanganies, and 36 labourers. In addition, the Anti-Malaria Campaign Convicts Brigade contributed a daily average of 22 men.

Oiling.—57,390 breeding places consisting of 2,248 wells, 2,057 ponds, 8,621 borrow pits, 14,841 drains, and 29,623 miscellaneous situations covering an extent of 5,996,000 square yards were oiled during the year. The amount of oil used was 11,992 gallons and its cost Rs. 4,916.72, while Rs. 2,528.50 was spent on labour. The total cost of this work was Rs. 7,445.22 in 1936, as against Rs. 3,798.81 in 1935. The excess was due to the heavy rainfall and to the beginning of irrigation for paddy cultivation. These factors caused innumerable miscellaneous water collections and swamps. These in addition to the attempts made to control mosquito breeding in Basawakkulam, in seepage channels and ponds by the introduction of oil bags, and in situations in and around Puliyankulam Experimental Station, accounted for the excess of oil used.

General Maintenance.—General maintenance work was done on a more extensive scale than even during the previous year, 3,820 drains of an aggregate length of 438,841 feet and 6,928 ponds, pools, and borrow pits were cleaned and maintained in satisfactory condition. 958 borrow pits were filled up, 1,434 water collections drained out, 1,361 pits were dug to bury water holding receptacles. Considerable amount of minor filling was done—approximately 750 cubes of earth and a large portion of town refuse were used for the purpose. The cost on labour for general maintenance and minor fillings done was Rs. 3,550.05.

Maintenance of Major Drainage Works—Elas: Halpanu-ela.—3.33 miles in length is divided into 3 tracts. Extensive repairs of erosions in tracts 1 and 3 were carried out in August with funds allocated by the Urban District Council. The ela invert in tract 3 was rubble-lined to a length of 1,197 feet and 500 feet of overhanging bank sloped down. 2,660 square feet of turfing was done. The total cost of maintenance and repair was Rs. 1,571.92 which is slightly in excess of the previous year's cost, but Rs. 566.71 was contributed from the Urban District Council vote for anti-malaria permanent works.

Toluwila-ela.—1.55 miles long is divided into three tracts. The whole length was well maintained. Several unsatisfactory side drains were herring-boned. Erosions in banks, and borrow pits on reservations were filled in. The cost of maintenance was Rs. 548.20 for the year, as against Rs. 1,929.50 the previous year.

Wan-ela.—0.78 miles long, begins at Nuwerawewa Spill and falls into the Malwatu-oya.

Unsatisfactory side drains were closed down and new herring-bone drains were opened up instead and rubble-lined. Thirty-four such drains of a length of 1,240 feet were opened and 123 others of a total length 3,899 feet were cleared and maintained. 820 feet of side drains and the main ela were built up with rubble. Erosions of banks were repaired to a length of 478 feet and 703 square feet of turf laid. 111 borrow pits on the reservations were filled with 92 cubes of earth. The cost of work done for the year amounted to Rs. 480.95, as against Rs. 119.60 the previous year.

Diulgahakotuwa-ela is 8,042 feet in length. This was maintained in satisfactory condition during the year. The Sanitary Engineer's Division carried out fillings in the commencing section of the ela after revetting 8,000 revetment pegs.

Nuwerawewa Spill Channel, 3,200 feet in length, starts at the southern sluice of the Nuwerawewa and falls into the Wan-ela. This was maintained by the Sanitary Engineering Division during the earlier half of the year and thereafter handed over to the Campaign.

Malwatu-oya Lane Pond Channel, 1,200 feet in length, opened up to drain the Malwatu-oya Lane Pond was completed during the middle of the year. The Campaign maintained it in good order.

Biological Control of Wells.—During the first eight months of the year, fish "millions" thrived satisfactorily in wells and their rate of propagation fluctuated between 74.4 per cent. and 94 per cent., while the larval rate was so low as 3.9 per cent. to 1.38 per cent.

With the onset of heavy rains in September, although fish introduction was intensified, the larval rate rose to 8.09 per cent. in October—the highest reached during the year. For the rest of the year, "millions" rate varied between 69.7 per cent. and 86.7 per cent. and the larval rate between 8.09 per cent. and 4.04 per cent.

Quinine Distribution.—33,976 five-grain tablets and 25,556 three-grain tablets of quinine were distributed to 12,039 persons.

General.—(*a*) A spleen survey of the children living within and of those living outside the town was carried out. In the town children under twelve years of age a rate of 69.8 per cent. was obtained. In those over twelve years, the spleen rate was 52.8 per cent. and the combined rate for all children examined in town was 67.2 per cent. From children outside town, the corresponding spleen rates were 80.6 per cent., 75.0 per cent., and 80.0 per cent. respectively.

In 672 blood films examined from school children in March 117 were positive (P. R. 17.4 per cent., 5 double infections). The species of parasites present were Benign Tertian 55 (47.0 per cent.), Malignant Tertian 41 (35 per cent.), and Quartan 21 (18 per cent.).

(*b*) The Convicts' Brigade of the Anti-Malaria Campaign was mainly employed in the reclamation of a large swamp situated on either side of the Railway line and the Approach road. This gang was also employed on several other draining and filling works, chiefly in cleaning and filling the edges of the Drinking Pond, draining and filling the large pond at Y road, rubble-lining the exit drain from the Washing Pond, and partial filling with town refuse of pools along Mihintale road.

(*c*) The Convicts' Brigade of the Urban District Council was also employed on similar work, the filling in of several borrow pits and straightening up of unsatisfactory drains in New Elakatuwa road, jungle clearing and fillings in section 6A along Mihintale road and first part of the Jaffna road junction, and filling and cleaning in 1 C around the Drinking Pond were some of the important works carried out by this gang. These convicts also did part filling of the pools along Mihintale road and the pond in Vessagiriya.

Kurunegala.—The staff at this centre of anti-malaria works consisted of 1 Medical Officer of Health, 2 Sanitary Inspectors till November (1 Sanitary Inspector thereafter), 1 overseer, 3 kanganies, and 24 labourers.

Oiling.—A total of 96,364 breeding places covering an extent of 5,766,500 square yards was oiled during the year. 11,533 gallons of Shell mxiture costing Rs. 4,382.54 was used for the purpose and with the cost of labour Rs. 2,087.83 the cost of oiling amounted to Rs. 6,470.37. The efficiency rate was maintained between 95 per cent. and 100 per cent.

General Maintenance.—This consisted of cleaning and maintaining all drains except irrigation channels and Public Works Department roadside drains. A total length of 426,411 feet of drains was cleaned at a cost of Rs. 2,428.10.

Maintenance of Elas.—The Bu-ela, Wan-ela, and Theliyagonna-elas were periodically cleared of vegetation and other obstacles thus ensuring a satisfactory flow. The cost of such work was Rs. 33.

Minor filling.—A tract of lowlying land along Colombo road near the hospital and 125 breeding places totalling 19,591 cubic feet of filling were done from July to December at a cost of Rs. 311.55. The Urban District Council contributed a sum of Rs. 25 towards this work.

Fish Distribution and Petrolization of Wells.—There are 607 wells in the town which constitute a serious problem in malaria control. 30,538 examinations were made of the wells, and 28,435 were found with " millions ". 1,655 were positive to anopheline larvae giving a larval rate of 5.8 per cent. for the year. From January to June, in addition to the introduction of fish, the wells were petrolized and the larval rate fluctuated between 2.4 per cent. and 3.4 per cent. From July, petrolizing was stopped and the larval rate was 4.7 per cent. in July, 4.6 per cent. in August, 3.1 per cent. in September, 13.2 per cent. in October, 16.7 per cent. in November, and 11.3 per cent. in December, Petrolizing was recommenced on December 21. The total cost of labour and petrol used on this work was Rs. 1,025.25.

Quinine Distribution.—The children attending the town schools and the general public were given quinine, the former in a systematic way and the latter on application. From January to April this work has done by a quinine distributor, and from May to November by a Sanitary Inspector. Thereafter the Principals of the schools are carrying on the work of distribution in schools. A total of 311,310 grains of quinine was distributed.

General.—(*a*) The spleen examination carried out in March gave a rate of 68.0 per cent. for all children examined.

(*b*) With the contribution of Rs. 100 a month made by the Urban District Council for permanent anti-malaria works, a drain from Circular road to culvert No. 2/4 in Puttalam road was taken in hand for construction.

Chilaw.—The year was the ninth of anti-malaria activities in this town.

The staff consisted of 1 Medical Officer of Health, 2 Sanitary Inspectors, 1 overseer, 1 kangany, and 43 labourers.

Oiling.—A total area of 8,590,500 square yards of breeding places was treated with 10,601 gallons of Shell mixture. This work cost Rs. 6,534.47, of which Rs. 4,252.42 was for oil and Rs. 2,282.07 for labour. The efficiency rate for all types of breeding places never fell below 94 per cent. and was for the greater part of the year maintained at 100 per cent.

Paris Green Spraying.—Anopheline breeding in large bathing and drinking ponds and in gala wells was controlled by spraying Soapstone Paris Green Mixture. Treatment of gala wells with this mixture was stopped from July and fish introduction was substituted. The total extent treated was 504,300 square yards, and 2,235 lb. of the mixture costing Rs. 96.82 were used. With a labour force costing Rs. 1,284.88, the total cost of this control measure was Rs. 1,381.70. The efficiency rate varied between 73 per cent. and 100 per cent. being usually above 80 per cent. and four times reaching 100 per cent.

Fish Distribution.—4,807 examinations of wells and 895 examinations of gala wells were made and only 43 of the former and 1 of the latter were found positive to anopheline larvae. The monthly efficiency rate for wells was throughout the year as high as 99 per cent. and dropped only once to 92.4 per cent.,

while the rate for gala wells was 100 per cent. except in August when it was 98.8 per cent. 339 wells and 77 gala wells were stocked with "millions" during the year and in some of the gala wells the fish were thriving so exceptionally well as to act as subsidiary nurseries.

Maintenance.—Preliminary cleaning and trimming of edges of breeding places prior to oiling, cleaning of drains and ditches, cleaning of edges of large ponds, &c., formed the chief maintenance work. Considerable improvement was made to the Wattakalai Odai by uprooting and clearing jungle and grading the Odai from Puttalam road culvert to the Railway line culvert. A certain amount of minor filling was done in section 3c where a drain leading to the lagoon was constructed and maintained. A deep and wide drain in sub-section 8A was narrowed by filling and turfing the sides. 17,279 situations were attended to at a cost of Rs. 6,385 for the year.

Filling of Abandoned Gala Wells.—With the Urban District Council vote of Rs. 1,500, 28 gala wells were filled up during the year. The material used was sea sand and coir dust in the proportion of 2/3 and 1/3 and the cost was met from Urban District Council funds. The cost of labour was met from the campaign allocations. This brings the total number filled during the years 1934, 1935, and 1936 to 152 (including 7 wells filled by the Brother Director of St. Mary's College).

In addition, continuation of filling of 58 gala wells was completed.

Filling of Abandoned Pits and Trenches.—The town rubbish made available by the Urban District Council was utilized in filling 2 lowlying areas, 8 pits, 1 pond and 6 trenches. To minimize fly breeding and other nuisance, a layer of coir dust was spread over the refuse fillings. With cinders supplied by the Railway Department, the lowlying area between the lagoon and the Railway line was filled and an area 450 feet by 105 feet was reclaimed. The cost of labour of these works was also borne by the campaign.

Drainage.—The first permanent drain at Watakalai Odai was constructed under the supervision of the Sanitary Engineer.

Quinine Distribution.—Quinine was distributed to school children on lines laid down by the department. Quinine was also issued to the general public on application. The quantities expended for the year were 21,589 five-grain tablets and 38,899 three-grain tablets.

General.—Two spleen examinations were conducted in the year, the first in March in connection with the Island-wide spleen survey and the other in November and December as part of routine work of the campaign. The combined rate at the March examination was 35.5 per cent. and in the other examination 13.6 per cent. 110 blood films examined from 6 town schools in November and December gave only 2 positives (B.T.) P. R. 1.8 per cent., while 20 films from a school outside the campaign area gave 4 positives (B. T. 2, M. T. 2)—P. R. 20.0 per cent.

The rainfall for the year was slightly above the previous year's and was 58.07 inches.

The incidence of malaria as judged by hospital attendances was 5,002, as compared with 24,537 the previous year.

Badulla.—The staff consisted of a Medical Officer of Health, 2 Sanitary Inspectors, 1 overseer, a peon, and 14 labourers.

Oiling.—The margins of the three rivers, Badulla-oya, Kuda-oya, and Rambukpotha-oya, and the sand pools and rock pools in the beds of these rivers were oiled. In addition, all borrow pits and stagnant pools in the control zone of the town were similarly treated. The total extent oiled during the year was 1,368,000 square yards and 2,736 gallons of oil mixture costing Rs. 1,071.23 were used for the purpose. With the cost of labour at Rs. 2,311.38, the total cost of this item of work was Rs. 3,382.61. The efficiency rate was 99.7 per cent. for the year.

Maintenance Work.—Under this head, the following works were carried out:—(*a*) Cleaning and trimming river margins, (*b*) filling sand pools and rock pools in river beds or draining them where possible, and (*c*) filling pits, borrow pits and stagnant pools in the various sections of the town.

2,958 situations under (*b*) and 341 situations under (*c*) were attended to at a cost of Rs. 2,602.42 for labour.

River Training Works.—The Sanitary Engineer recommenced river training works in May and finished them at the end of September. From October the works were being maintained in satisfactory condition at a cost of Rs. 123.74 for labour. The main works so far done cost Rs. 4,852.

Quinine Distribution.—The schools and the general public were given quinine tablets, the quantity distributed for the year being 16,438 five-grain tablets and 12,915 three-grain tablets.

General.—The rainfall during the year was 66.56 inches and was almost the same as in 1935 (66.16 inches).

The incidence of malaria according to hospital attendances showed a slight decrease in 1936 as compared with the previous year—the figures being 11,265 and 15,615 respectively. The figure for 1936, however, was very high in comparison with those of 1932, 1933, and 1934. The total attendances for all cases at Badulla hospital were 31,107 in 1935 and 32,543 in 1936.

The spleen survey of boys' schools in town carried out in March gave a rate of 40.3 per cent.

Puttalam.—The year was the seventh of anti-malaria activities in this town.

The staff consisted of 1 Sanitary Inspector, a peon, 2 kanganies, and 26 labourers.

Oiling.—Weekly applications of oil were made on all breeding places, except wells, paddy fields under cultivation, and large tanks. A total area of 1,926,000 square yards was treated with 3,852 gallons of Shell Mixture. The total cost of oiling was Rs. 2,118.45, of which Rs. 1,463.70 was for oil and Rs. 654.75 for labour. The efficiency rate for the year was 98.9 per cent.

Maintenance Work.—This item consisted of (*a*) cleaning and trimming margins of ponds, pools, and other breeding places prior to oiling, (*b*) cleaning drains and ditches, and (*c*) cleaning edges of tanks. A total of 3,862 situations was attended to at a cost of Rs. 1,576.74 for labour.

Fish Distribution.—5,648 wells were inspected and into 2,829 of them "millions" were introduced. Only 58 wells were found to breed anopheline larvae (1.02 per cent.). The cost of labour was Rs. 191.45.

In September 65 wells were bailed out to remove carnivorous fish and increase the chances of "millions" thriving. This work cost Rs. 80.50.

The efficiency rate for this work was 98.3 per cent.

Filling.—103 pools, 184 borrow pits, and 4 lowlying areas were filled at a cost of Rs. 971.05 for labour.

Semi-Permanent Drainage.—The following drainage works of a semi-permanent nature were outlined by the Sanitary Engineer and carried out:—

(*a*) The completion of the flood outlet channel from Nedunkulam sluice to Puttalam lagoon (commenced in 1935 and held up pending acquisition of land) was effected. 2,200 feet of channel with a breadth of 8 feet were cut at a cost of Rs. 718.98.

(*b*) Three cattle bridges—2 of 12 feet over channel in section 4B and one of 24 feet in length over channel in section 3A and 3B were constructed at a total cost of Rs. 176.

(*c*) 9,287 square feet of sides of channel in sections 4A and 4B were turfed at a cost of Rs. 345.74.

(*d*) Concrete levels were fixed to three main channels at distances of 200 feet in sections 1A, 15, 4A, 4B, 3A, 3B, 3C, and 11A. Cost of work was Rs. 81.80.

Maintenance of Drains and Channels.—Fourteen channels and 16 drains were attended to by removing silt, levelling, filling, grading and repairing breaches in sides. A total length of 46,160 feet was maintained in good order at a cost of Rs. 1,639.55.

Quinine Distribution.—During the fever season, children attending the six town schools were treated twice a week. The campaign staff and the general public were supplied with quinine on application. The total quantity of quinine distributed was 15,817 five-grain tablets and 9,155 three-grain tablets.

General.—The campaign labourers' lines and latrines were repaired at a cost of Rs. 99.75.

The rainfall for the year was 33.42 inches and was less than that of 1935 (40.77) and was the lowest on record from 1931 onwards.

The hospital attendances for malaria were 2,353 and for all diseases 5,483. These figures show increases over those for 1935 which were 2,005 and 5,344 respectively.

Trincomalee.—The anti-malaria works in the Urban Council area were on a maintenance basis and all costs other than the salary of the Sanitary Inspector were borne by the Urban District Council.

The staff consisted of a Medical Officer of Health, a Sanitary Inspector, an overseer, 1 head labourer, and an average of 10 labourers. A kangany worked from January to April.

Oiling.—2,878 gallons of oil were used in treating all breeding places. This work cost Rs. 1,676.20, of which Rs. 1,065.15 was for oil and Rs. 611.05 for labour.

Maintenance.—This consisted of cleaning all drains in the area and keeping them in good order and cost Rs. 914.40.

Filling.—From June to October a certain amount of filling was done. Some borrow pits at Uppuweli and in Divisions Nos. 9 and 4 were filled. Borrow pits created by the removal of earth for building houses in Karachi Division XI. were also filled. The cost of this work was Rs. 368.80.

Drainage.—(*a*) A new drain was cut by the Urban District Council for flood water from the lowlying area behind the vernacular school at Uppuweli to the sea. This cost the Urban District Council about Rs. 450 but was not charged to the allocation for anti-malaria works.

(*b*) The drain constructed by the Sanitary Engineer at Uppuweli was completed in September, but the work on the culvert got damaged by rough seas.

Fish Introduction.—Fish introduction to wells was carried out by the Entomological Assistant. Owing to heavy breeding of anopheline larvae in January and February the work was intensified and all the 1,020 wells were stocked with "millions" once in two weeks.

General.—The rainfall for the year was 70.14 inches of which as much as 25.05 inches fell in December.

Railway Anti-Malaria Work, Maho.—The staff consisted of a Sanitary Inspector, 1 kangany, and 29 labourers. Anti-malaria activities were confined to a radius of $\frac{1}{4}$ mile from the Railway Station.

Oiling.—29,295 breeding places were oiled at a total cost of Rs. 1,169.55. 1,615 gallons of oil were used for the purpose and cost Rs. 613.70, while the labour for this work cost Rs. 555.85.

Maintenance.—This work consisted of (*a*) clearing of rank vegetation in the tanks and about the railway premises and (*b*) cleaning of drains. Clearing of rank vegetation around railway premises was discontinued towards the end of the year. 3,741,100 square feet of rank vegetation were cleared and 147,275 feet of drains maintained at a cost of Rs. 3,531.44.

Filling.—155 pits were closed up at a cost of Rs. 1,255.50 for labour.

Wells.—Till August, 38 wells were petrolized 1,179 times, the petrol costing Rs. 37.45. Petrolizing was discontinued in August and fish introduction was carried on thereafter at a total cost of Rs. 24.40.

Quinine Distribution.—1,575 five-grain tablets and 528 three-grain tablets were distributed to the railway staff.

General.—The scavenging of the railway area and the Bazaar area was done by the campaign labourers till the end of November. The work in the Bazaar area was taken up by the Village Committee from December. The cost of scavenging for the year was Rs. 975.60.

There was a rainfall of 53.79 inches for the year.

The dispensary attendances for malaria were 20,599 for the year. The figure for December (3,712) was the highest and the figure for September (656) the lowest.

Minneriya Development Scheme.—The staff consisted of 1 Sanitary Inspector, 1 Apothecary, and a gang of labourers 8-20 in number. The Medical Officer, Polonnaruwa, visited the colony twice a week or more often when necessary.

Oiling.—The area was divided into sections and the area was oiled on a more extensive and methodical scale. An overseer was appointed to supervise oiling. 123,758 breeding places were treated with 7,991 gallons of oil costing Rs. 3,044.18. The transport of oil for the area cost Rs. 99.65 and labour Rs. 1,782.20. The total cost of oiling was, therefore, Rs. 4,826.03.

Maintenance.—Under this branch of anti-larval work, 2,746 borrow pits were filled, 16,968 situations cleaned preparatory to oiling, and 2,283 minor drains opened, the whole work costing Rs. 1,607.94 for labour.

Shell Tox Spraying.—From January to July, weekly treatments were applied to huts, and from August to November Shell Tox spraying was suspended. In December, intensified spraying was started with a view to giving at least two or three treatments to a hut during a week. A total of 1,524 huts were given 3,159 treatments. 255¼ bottles of Shell Tox were used. The total cost of the work was Rs. 393.38—the Shell Tox costing Rs. 255.25 and the labour Rs. 138.13.

Paris Green Work.—This was done since March on selected places, *e.g.*, paddy fields and irrigation channels. 21,426 lb. of the mixture was sprayed at a cost of Rs. 945.57 for the mixture on 59,006 places. With the labour costing Rs. 784.93 and transport Rs. 56.40, the total cost amounted to Rs. 1,786.90.

Fish Distribution.—An attempt was made to breed "millions" in a reservoir and some were introduced into irrigation channels. But there was no trace of the "millions" later.

Quinine Distribution.—Quinine Bisulphate tablets were given as a prophylactic measure and every colonist, dependent, and child was requested to take a tablet at dusk every other day. Owing to the fact that the colonists form a floating population an accurate study of the value of quinine prophylaxis was not possible. But from a general impression of the dispensary attendance figures, this measure seemed to have been of some value. 50,604 doses of quinine were administered to 4,840 persons. The quinine cost Rs. 1,012.08.

Housing of colonists.—The same unsatisfactory position commented upon in the report for 1935 continued. Only 4 fairly permanent houses have been built on the residential sites, and the colonists continued to live in their allotments scattered over the area. This has complicated matters to a great extent. Drug distribution of anti-larval measures have to be carried out in far away sections purely for the sake of one or two huts. Both these measures were rendered more difficult, more expensive, and less effective on account of the present practice of allowing the allottees to squat on their allotments instead of living on the sites selected by the department.

General Sanitary Measures.—Pit latrines were found unsuitable and had to be abandoned owing to the water logged condition of the ground.

The Medical Officer and the Sanitary Inspector frequently visited the Bazaar area and attended to general sanitary measures.

Except for the dispensary well, no built wells exist in the area and in the dry season the colonists are much inconvenienced owing to the lack of a water supply.

General Health, &c.—(*a*) The apothecary carried out out-door treatment and the Sanitary Inspector kept either the Medical Officer or the Apothecary informed of patients who were very badly ill.

(*b*) A Child Welfare and Maternity Clinic was opened in August and was conducted weekly at the dispensary. A Health Exhibition was held on the day of opening.

(*c*) The general health of the colonists was on the whole satisfactory considering the conditions under which the colonists live.

(*d*) A wave of malaria was noticed in the middle of the year probably due to the return of many labourers and colonists from China Bay.

(*e*) Towards the end of the year, the seasonal rise of malaria was observed.

(*f*) Three cases of pregnancy were admitted to the hospital and left after an uneventful confinement.

(*g*) Eighty-eight cases were treated at the hospital during the year, of which 36 were for malaria and 50 for other diseases. There were 2 deaths of colonists in the hospital.

(*h*) The dispensary figures for malaria for this year were—295 colonists, 104 adult dependents, 194 children dependents, and 1,515 others.

(*i*) The rainfall for the year was 59.42 inches, December alone contributing 20.01 inches.

China Bay.—Anti-malarial works on Crown land at China Bay were carried out by the Admiralty for some time and were taken over by the Department of Medical and Sanitary Services on April 22, 1936.

Staff.—A Sanitary Inspector was appointed to carry out work with a labour force of 3 overseers, 1 kangany, and 80 labourers. With the completion of the work on the channels, anti-malarial work was suspended as from September 26 but was re-started on October 3 with a labour force of 1 kangany and 5 labourers.

Oiling.—2,311 breeding places were treated with 700 gallons of oil. The oil cost Rs. 259 and the labour Rs. 430.80—the total cost of this item being Rs. 689.80.

Jungle Clearing.—Jungle along sides of channels, Public Works Department reservation, and railway line reservation was cleared to an extent of 1,174,032 square feet at a cost of Rs. 2,322.40.

Filling.—263 borrow pits, 12 drains and other pits, and sides of channels 1, 2, 3, 4, and 6 were filled and levelled. 141,993 cubic feet of earth filling was done at a cost of Rs. 1,333.05 for labour.

Drainage and improvements, &c.—

(*a*) Seven channels, the railway line side drain, the Customs roadside drain, and other branch drains were cut and graded to a length of 6,602 feet. 100,899 cubic feet of earth were excavated in the course of this work which cost Rs. 2,508.60.

(*b*) Six coconut trees and 30 other trees were cut and uprooted in channels 1, 2, and 5. This work cost Rs. 21.60.

(*c*) Channels Nos. 1, 2, 3, 4, and 6 were treated with revetment pegs to a length of 2,652 feet with 6,330 pegs. This work cost Rs. 214.40.

(*d*) 7,050 pegs each 4 feet long and 175 bundles of brushwood were cut and transported from the jungle. The cost of this work was Rs. 171.25.

(*e*) 11,187 feet of channels and drains were graded and maintained at a cost of Rs. 255.20.

All work at China Bay, including Rs. 80 for cost of contingencies and Rs. 30.40 for transport, cost Rs. 7,626.70.

Kataragama.—Anti-malaria works in connection with the Esala Festival at Kataragama were started on May 27, and were continued till the end of July, 1936.

Oiling.—The Menik-ganga was oiled on June 9 and thereafter at weekly intervals till July 28. In all, 150 gallons of the oil mixture was used. The margins of the river were cleaned of floatage before oil was applied.

Jungle Clearing.—All scrub jungle was cleared and burnt off commencing from the time the Sanitary Inspector arrived at Kataragama.

Quinine Distribution.—Quinine in tablet form was distributed to the villagers on two consecutive days a week commencing from June 10 and ending on July 30.

Shell Tox Spraying.—All living rooms at Kataragama were regularly sprayed with Shell Tox for destroying adult mosquitoes, 12 gallons of Shell Tox were used for the purpose.

General.—The Sanitary Inspector in charge attended to the general sanitation of the area in addition to his other duties.

Central Office and Laboratory, Colombo.—Half-yearly examinations of children in schools and villages situated within the observation centres were made; and both parasite and spleen surveys were conducted in detail. 6,495 blood films were examined from these centres and other places.

The first annual Island-wide spleen survey was carried out in March, 1936. It was restricted to the examination of boys in selected schools distributed throughout the Island. As the survey throughout the whole Island had to be completed within the selected month (March, 1936) it had necessarily to be carried out by as many as possible of the field officers of the department stationed in the different districts. Amongst such officers were District Medical Officers, District Medical Assistants, Medical Officers of Health, Apothecaries, &c., and they were guided in this work by a circular of instructions together with forms for recording the results. Owing to the large number of officers engaged in the work, a certain amount of error, due to the personal factor, would have crept in, but this was inevitable in the circumstances.

The tabulating and analysing of the data so obtained and correlating them with vital statistics and meteorological data were undertaken by the Superintendent, Anti-Malaria Campaign, and a special report was submitted at the end of May.

The main objects of the survey were to determine—

(*a*) The distribution and intensity of malaria in the Island as measured by spleen enlargement.

(*b*) The variations in distributions and intensity in different parts of the Island (as the survey is to be conducted yearly).

(*c*) The rate of recovery to the pre-epidemic state of the areas involved in the great epidemic.

The total number of children examined was 161,201. The number found with enlarged spleens was 49,456, giving an Island-wide spleen rate of 30.6 The detailed analyses were given in the special report on the survey submitted at the time. The following table shows the results of the survey according to the revenue districts of the Island :—

District.	Number examined.	Number Positive.			Spleen Rate.
		Small.	Moderate.	Large.	
Colombo	46,542	4,324	1,568	180	13·0
Kalutara	16,359	251	28	1	1·7
Kandy	11,291	1,653	1,670	389	32·8
Matale	3,085	743	696	265	55·2
Nuwara Eliya	1,822	185	165	64	22·1
Galle	7,623	90	19	2	1·4
Matara	5,113	471	187	116	15·1
Hambantota	2,248	692	559	180	63·6
Ratnapura	5,190	899	361	130	26·7
Kegalla	9,177	2,114	2,683	655	59·4
Kurunegala	16,662	4,237	5,942	2,343	75·1
Chilaw	6,822	1,965	874	150	43·8
Puttalam	895	328	274	94	77·7
Jaffna	7,978	1,094	369	88	19·4
Mannar	1,364	399	199	102	51·3
Mullaittivu	687	200	249	129	84·1
Badulla	4,893	902	698	162	36·0
Batticaloa	7,762	1,781	1,212	375	43·3
Anuradhapura	3,766	1,047	1,349	527	77·6
Trincomalee	1,922	460	467	100	53·4
Total	161,201	23,835	19,569	6,052	30·6

The various meteorological features of the Island were studied and monthly reports submitted for the information of the Provincial Surgeons.

Eight meetings of the Departmental Committee on Malaria were held at which routine matters connected with the Malaria Campaign Centres were discussed and actions taken.

(2) **Dengue.**—There were only 6 cases of dengue during 1936.

(3) **Filariasis.**—There were 103 cases of filarial diseases admitted to hospitals in 1936 with 3 deaths. In addition, 267 cases were treated as out-patients, of which 113 were in the North-Western Province, 78 in the Eastern Province, 35 in the Southern Province, 30 in the Northern Province, and 11 in the Western Province.

(*b*) Helminthic Diseases.

Ankylostomiasis.—The following table shows a comparison of the 1936 figures with the figures for the previous five years:—

	1931.	1932.	1933.	1934.	1935.	1936.
Number of cases at dispensaries	246,620	303,769	271,564	315,237	208,452	258,720
Cases admitted to hospitals	9,902	12,421	13,674	15,444	15,096	14,322
Total number of deaths in hospitals	724	679	723	721	1,061	621
Total number of deaths registered for the Island	2,247	1,955	1,877	2,118	2,172	—

Ankylostomiasis Campaign.—The year began with 28 dispensers working in the field and 4 microscopists in the laboratory. Two dispensers and 3 microscopists were out on malaria duty till the second week in February, 1936. A great proportion of those living in the areas affected by malaria suffered from direct and indirect after effects of the epidemic—the direct after effects being anaemia and malnutrition and indirect effects food shortage which severally and jointly, seriously handicapped the activities of the campaign.

Administrative Organization—Personnel.—The campaign staff which continued to be the same as during the previous years, viz., 1 Superintendent, 2 clerks, 32 dispensers, 8 microscopists, 1 office peon, and 2 laboratory attendants was strengthened by the addition of 6 qualified apothecaries as from December 15, 1936.

Procedure of the Campaign.—At the beginning of the year the same procedure as was followed in the previous years was continued. The " Anky " dispensers were attached to various officers of the department for varying periods to work under their supervision. Besides this, officers in charge of Government hospitals and dispensaries administered " Anky " treatment to as many as possible of those calling at their institutions for treatment. Furthermore, these officers were expected to treat as many school children and estate labourers in the immediate vicinity of their establishments for ankylostomiasis without the aid of the campaign dispensers. A slight variation was adopted in the method of administering mass treatment in the North-Central Province, where on account of the prevailing malaria epidemic and its after-effects, it was not possible to carry out mass treatment during 1934 and 1935. Here intensive mass treatment was commenced during the month of June. To conduct the campaign activities successfully, the co-operation of the headmen and head teachers were enlisted with the kind help of the Government Agent and the Divisional Inspector of Schools respectively.

The annual advance programme for 1937 will be drawn up to carry on the work in these lines.

Work accomplished.—As in previous years the work was carried out through the following agencies:—

(1) Medical Institutions.
(2) Campaign Dispensers.
(3) Health Units.
(4) Mandapam Camp.
(5) Estate Medical Staff.

TABLE I.

Treatments by all Agencies in 1936 and 1935.

Agencies.	Treatments, 1936. First.	Subsequent.	Total.	1935. Total.
Government Institutions :—				
(1) At Institutions	1,165,117	58,733	1,223,850	1,027,173
(2) Outside Institutions	29,223	72	29,295	44,530
Campaign Dispensers :—				
(1) School children	107,502	—	107,502	56,264
(2) Estate labourers	256,362	—	256,362	76,152
(3) Villagers	60,658	—	60,658	28,736
Health Units	45,255	—	45,255	25,745
Mandapam Camp	34,148	—	34,148	36,623
Estate Medical Staff	80,194	18,308	98,502	106,739
Total	1,778,459	77,113	1,855,572	1,401,962

The total number of treatments administered during the year under review was 1,855,572, as against 1,401,962 during 1935 and 1,991,915 during 1934.

Table II. contains the number of treatments given in the various provinces and at the Mandapam Camp. The average egg count per c.c. per person and the infestation rate before and after treatment are also shown. The average egg count for the Island was 1,800 per c.c. per person. It came down to 900 per c.c. per person after treatment. It was possible to examine only 14,265 before treatment samples by Stoll's method of egg counting, as against 6,718 samples during the previous year.

The infestation rate calculated on the basis of Stoll's method of egg counting was reduced from 76.2 before treatment to 56.4 per cent. after treatment.

TABLE II.

Ankylostomiasis Treatments given by all Agencies, and Average Egg count per c.c. per Person and Percentage infected before and after Treatment, by Provinces, for the Year 1936.

Province.	Treatments. First.	Subsequent.	Total.	Microscopical Examinations by Stoll's Method only — Before Treatment. Number examined.	Average Egg count.	Percentage infected.	After Treatment. Number examined.	Average Egg count.	Percentage infected.
Eastern	85,895	2,116	88,011	1,099	3,500	89·8	—	—	—
North-Central	42,662	333	42,995	951	1,900	82·4	283	1,100	62·2
North-Western	189,549	5,643	195,192	1,250	1,900	79·0	202	800	55·4
Southern	215,717	16,796	232,513	1,228	1,500	77·9	347	900	60·2
Sabaragamuwa	196,464	9,469	205,933	1,098	1,500	75·5	113	700	49·6
Western	395,697	14,373	410,070	3,436	1,900	75·0	979	1,100	60·2
Central	395,787	24,889	420,676	4,174	1,500	73·0	869	700	49·3
Northern	99,341	1,151	100,492	588	1,500	71·1	181	800	61·9
Uva	123,199	2,343	125,542	441	1,400	65·1	159	1,100	60·4
Mandapam Camp	34,148	—	34,148	—	—	—	—	—	—
Total for 1936	1,778,459	77,113	1,855,572	14,265	1,800	76.2	3,133	900	56.4
Total for 1935	1,307,051	94,911	1,401,962	6,718	1,400	75.1	1,110	800	61.3

Results of Examinations made on the same Specimens within Three Days and again Ten to Twelve Days of Collection.

	Within Three days of Collection.	After Ten to Twelve days of Collection.
Number examined	52	52
Average egg count	3,300	1,400
Percentage infected	82·7	52·0

Soil Examination for Hookworm Larvae.—During the year under review moist earth from 13 different localities in the Kalutara Health Unit area was examined for presence of hookworm larvae and reports forwarded to the Medical Officer of Health, Health Unit, Kalutara. Two of the samples were dry and no larvae present. Another 2 were free from larvae. All the other 9 contained nematodes, of which 5 contained hookworm larvae in addition. This goes to show that in spite of the best efforts for nearly seven years to rid the area of surface pollution, still the place contains the larvae—the soil is not rid of danger hidden and unsuspected. The evidence gained by this examination indicates the necessity for persistent and long continued efforts to prevent soil pollution.

(1) *Medical Institutions.*—Table III. gives the figures of treatments at Government Medical Institutions. The percentage of treatments to first visits is 20.0 per cent. for the year under review, which is rather low. It was 13.2 per cent. in 1935 and 27.2 for 1934.

Table III.

Ankylostomiasis Treatments at Government Institutions during the Year 1936.

Province.	Attendance (First Visits).	Treatments.			Percentage of Total Treatments to First Visits.
		First.	Subsequent.	Total.	
Uva ..	213,416	57,381	483	57,864	27·1
Western	1,354,088	302,857	13,289	316,146	23·3
Sabaragamuwa	569,336	123,156	6,053	129,209	22·7
Central	690,125	137,116	13,937	151,053	21·4
Northern	424,316	84,746	1,079	85,825	20·2
Southern	1,070,282	187,547	15,829	203,376	19·0
Eastern	398,390	72,816	2,116	74,932	18·8
North-Western	1,078,071	168,158	5,614	173,772	16·1
North-Central	331,459	31,340	333	31,673	9·6
Total for 1936 ..	6,129,483	1,165,117	58,733	1,223,850	20·0
Total for 1935 ..	7,772,478	951,619	75,554	1,027,173	13·2

Table IV. shows the number of treatments administered by the officers of the department outside their institutions without the aid of the campaign dispensers. Only 135 units were attended to with a total of 29,295 treatments, as against 44,530 treatments in 145 units during 1935. This poor result is also due to recrudescences of malaria and incidence of influenza waves with attended complications in various parts of the Island during the year under review.

Table IV.

Ankylostomiasis Treatments given by the Medical Officers of the Department outside their Institutions without the Aid of the Campaign Staff during 1936.

Province.	Schools.		Estates.		Villages.		Total.	
	Number.	Number treated.	Number.	Number treated.	Number.	Number treated.	Number	Number. treated.
Central ..	9	630	48	16,425	—	—	57	17,055
Western ..	8	841	12	2,399	6	1,964	26	5,204
North-Western ..	15	1,344	—	—	7	1,858	22	3,202
Sabaragamuwa ..	2	196	3	1,776	—	—	5	1,972
Uva ..	1	27	3	746	2	87	6	860
Southern ..	7	473	—	—	2	73	9	546
Northern ..	5	108	—	—	5	348	10	456
Total for 1936 ..	47	3,619	66	21,346	22	4,330	135	29,295
Total for 1935 ..	27	1,353	108	41,425	10	1,752	145	44,530

(2) *Campaign Dispensers.*—The following is an analysis of the work done by the campaign dispensers during the year 1936:—

Table V.

Ankylostomiasis Treatments given by the Campaign Dispensers in Schools, Estates, and Villages during 1936.

Province.	No. of Units dealt with.			Census in Schools.	Treatments.				Percentage of School Children treated to Census.
	Schools.	Estates.	Villages.		School Children.	Estate Labourers.	Villagers.	Total.	
North-Central ..	62..	1..	159..	4,295..	3,253..	25..	8,044..	11,322..	75·7
Central ..	260..	502..	154..	35,500..	24,748..	154,646..	9,477..	188,871..	69·7
Uva ..	35..	134..	116..	3,770..	2,476..	46,518..	6,905..	55,899..	65·7
Sabaragamuwa ..	88..	150..	60..	10,107..	6,273..	42,651..	3,271..	52,195..	62·1
Eastern ..	84..	— ..	62..	8,164..	4,919..	— ..	4,605..	9,524..	60·3
Western ..	517..	57..	119..	73,640..	39,264..	9,694..	13,135..	62,093..	53·3
Southern ..	82..	10..	131..	13,667..	6,818..	2,331..	9,212..	18,361..	49·9
North-Western ..	121..	7..	72..	15,686..	7,063..	497..	4,486..	12,046..	45·0
Northern ..	213..	— ..	24..	29,702..	12,688..	— ..	1,523..	14,211..	42·7
Total for 1936 ..	1,462	861	897	194,531	107,502	256,362	60,658	424,522	55·3
Total for 1935 ..	911	288	435	111,320	56,264	76,152	28,736	161,152	50·5

The census represents the average daily attendance in schools during the three months preceding the month of treatment.

Medical Officers in charge of hospitals and dispensaries, apothecaries in charge of dispensaries, Medical Officers of Health of districts, School Medical Officers, and Assistant Inspecting Medical Officers supervised the work of the "Anky" dispensers. Every dose administered by the dispensers was prescribed after examination of the person concerned by one or other of the officers mentioned above. The work of the field staff of the campaign carried out in areas under the control of Health Units is not shown in this table, although a good percentage of the treatment in these areas was administered by them.

The "Anky" dispensers administered treatments in 3,220 units comprising of 1,462 schools, 861 estates, and 897 villages during the year. They treated in all 424,522 persons, of whom 107,502 were school children. During the year 1935 they attended in 1,634 units, comprising of 911 schools, 288 estates, and 435 villages, to 161,152 persons, of whom 56,264 were school children. In 1934, 309,955 persons, including 82,572 school children, were treated in 3,095 units, comprising of 1,272 schools, 497 estates, and 1,323 villages.

The table below gives a list of the different supervising officers with the number of units supervised by them:—

Table VI.

Number of Schools, Estates, and Villages treated by Campaign Dispensers under the supervision of various Officers of the Department during the Year 1936.

Supervising Officers.	Schools.	Estates.	Villages.
District Medical Officers and Assistants ..	396	719	236
Apothecaries in charge of dispensaries ..	627	105	634
Medical Officers of Health of districts ..	246	9	27
School Medical Officers	191	—	—
Assistant Inspecting Medical Officer, Bandarawela	—	18	—
Assistant Inspecting Medical Officer, Kandy ..	—	10	—
Superintendent, Ankylostomiasis Campaign ..	2	—	—
Total for 1936 ..	1,462	861	897
Total for 1935 ..	911	288	435

Table VII. shows the number of treatments administered on estates by the campaign staff and the designation of the officers who supervised these treatments.

Table VII.

Treatments given by Campaign Dispensers on Estates during 1936.

Supervising Officers.	Number of Estates Treated.	Census.	Number Treated	Percentage treated to Census.
District Medical Officers and Assistants ..	719	274,334	220,621	80·4
Apothecaries in charge of dispensaries ..	105	34,194	24,874	72·7
Assistant Inspecting Medical Officer, Bandarawela	18	7,123	6,188	86·9
Assistant Inspecting Medical Officer, Kandy ..	10	4,357	3,292	75·6
Medical Officers of Health of districts ..	9	2,355	1,387	58·9
Total for 1936 ..	861	322,363	256,362	79·5
Total for 1935 ..	288	96,899	76,152	78·6

(3) *Health Units.*—The number of treatments given in Health Unit areas during the year under notice was 45,255, as against 25,745 during 1935 and 37,755 during 1934.

Table VIII.

Ankylostomiasis Treatments given by Health Units in 1936.

Health Units.	1936.	1935.
Kalutara	9,454	4,772
Panadure	6,450	3,391
Kurunegala	5,777	3,657
Matara	5,562	6,034
Dehiwala	5,427	3,766
Kadugannawa	5,021	1,391
Kegalla	4,009	165
Trincomalee	3,555	2,569
Total ..	45,255	25,745

(4) *Mandapam Camp.*—The number of those passing through to Ceylon from India *viâ* Mandapam was fewer and consequently the number of treatments administered was fewer than the previous year.

Table IX.

Ankylostomiasis Treatments at Mandapam Camp in 1936.

Month.	Number arrived.	Number treated.	Percentage treated.
January	1,189	985	82·8
February	2,002	1,690	84·4
March	3,065	2,544	83·0
April	3,007	2,446	81·3
May	4,803	3,824	79·6
June	5,991	4,763	79·5
July	5,462	4,657	85·3
August	3,655	3,123	85·4
September	4,205	3,642	86·6
October	3,448	2,934	85·1
November	2,354	2,023	85·9
December	1,732	1,517	87·6
Total for 1936 ..	40,913	34,148	83·5
Total for 1935 ..	42,746	36,623	85·7

(5) *Estate Medical Staff.*—There is a drop of 8,237 in the number of treatments given during the year by the Estate Medical Staff when compared with the number treated in 1935.

TABLE X.

Ankylostomiasis Treatments reported as given by the Estate Medical Staff during 1936.

Province.	Census of estates treated.	Treatments.			Percentage of total treatments to Census.
		First.	Subsequent.	Total.	
Central	222,051	47,724	10,952	58,676	26·4
Sabaragamuwa	81,022	15,132	3,416	18,548	22·9
Uva	60,514	9,059	1,860	10,919	18·0
Western	16,018	4,212	1,084	5,296	33·1
Southern	6,806	3,701	967	4,668	68·6
North-Western	1,324	366	29	395	29·8
Total for 1936	387,735	80,194	18,308	98,502	25·4
Total for 1935	460,347	87,383	19,356	106,739	23·2

Laboratory Work.—The following table gives the degree of infestation for different age groups:—

TABLE XI.

Intensity of Infection and Incidence Rate by Age Groups in 1936.

		Before Treatment.		
		Number examined.	Average Egg-count per c.c. per Person.	Percentage infected.
0–4 years	Males	46	600	54·3
	Females	32	400	34·4
	Both sexes	78	500	46·2
5–18 years	Males	8,920	2,000	79·2
	Females	3,761	1,600	73·6
	Both sexes	12,681	1,900	77·5
19–40 years	Males	773	1,200	64·4
	Females	529	1,300	67·5
	Both sexes	1,302	1,300	65·7
41–60 years	Males	139	1,700	73·4
	Females	50	1,700	74·0
	Both sexes	189	1,700	73·5
Over 60 years	Males	12	2,100	66·7
	Females	3	2,800	100·0
	Both sexes	15	2,200	73·3
All ages	Males	9,890	1,900	77·8
	Females	4,375	1,500	72·6
	Both sexes	14,265	1,800	76·0

The following table shows the different intestinal parasites found during the course of microscopical examinations:—

TABLE XII.

Intestinal Parasites found in the Course of Microscopical Examinations made in the Central Laboratory in 1936.

	Before Treatment.		After Treatment.		Multiple Parasitic Infestation.		
	Number.	Per-centage infected.	Number	Per-centage infected.		Before treat-ment.	After treat-ment.
Specimens examined	18,013		3,486				
Infected with hookworms	14,276	79·3	2,231	64·0	Harbouring no parasite	851	246
Infected with round worms	12,879	71·5	2,235	64·1	With one kind of parasite	2,372	686
Infected with whip worms	13,586	75·4	2,523	72·4	With two kinds of parasite	4,766	1,161
Infected with thread worms	364	2·0	34	·97	With three kinds of parasite	9,839	1,378
Infected with tape worms	13	·07	3	·09	With four kinds of parasite	185	15
Infected with Oxyuris Incog.	24	·13	7	·2	Total infected with some kind of parasite	17,162	3,240
Total examined before and after treatment	21,499						

Research Work.—During the year 1936, observations on the effect of tetrachlorethylene as an anthelmintic and the minimum effective dose were made on 33 children at the Lady Ridgeway Hospital. The ages of these patients ranged from 2½ to 10 years.

Conference on Ankylostomiasis.—Four quarterly conferences were held during the year under the Chairmanship of the Director of Medical and Sanitary Services. Quarterly reports of the progress of the campaign were submitted by the Superintendent, and matters connected with its advancement discussed.

2.—GENERAL MEASURES OF SANITATION.

Conservancy.—The proper disposal of human excreta is still an important public health problem in Ceylon. The programme of latrine construction with cement concrete squatting plates is being vigorously carried out to reach the standard of 15,000 latrines per annum. The number of private latrines has increased by 8,339 as compared with figures for 1935. In fact it has gone above the 15,000 mark.

In urban areas the pail system is in vogue and in rural districts different types of pit latrines such as deep pit, bored hole, and mound latrines are in existence.

The number of squatting plates made and sold for the year under review has increased by 2,875 and 4,696 respectively as compared with the figures for 1935. This is due to the fact that people have started making their own plates with moulds supplied to Sanitary Inspectors. On account of this the number of moulds has been increased by 316.

The department recognizes a latrine as sanitary only when it is supplied with a cement concrete squatting plate. The wooden platforms in the old type of latrines are fast disappearing as they are being replaced by cement concrete squatting plates. The making and selling of these plates are now entirely in the hands of private individuals and voluntary organizations but the construction is under the supervision of Sanitary Inspectors who now do not sell the plates themselves.

The sum of Rs. 5,000 provided by the Rockefeller Foundation continues to be used for the construction and sale of cement concrete squatting plates to the villagers. In the 1936-37 Estimates, Government added a sum of Rs. 5,000 to this fund making a total of Rs. 10,000.

Advances were made from this fund to Sanitary Inspectors and at the end of December, 1936, Rs. 4,731 were in their hands. Since the sale of plates was withdrawn from them advances are now made through Medical Officers of Health to voluntary organizations who undertake to do the work.

Bored-hole latrines are being constructed in suitable soil and have proved very satisfactory. One Medical Officer of Health reports that they are a boon to the town where owing to lack of space no other type of latrines could be constructed.

(1) *Public Latrines.*—During the year under review 22 public latrines according to departmental type plan were built by Sanitary Boards and Village Committees in the Island as tabulated below :—

Province.	No. of Latrines.
Central	7
Northern	8
Sabaragamuwa	4
North-Western	3
Total ..	22

(2) *Private Latrines.*—17,901 latrines were constructed during the year as compared with 9,562 in 1935. The following is a statement of work in this connection throughout the Island :—

(*a*) Number of notices served during the year :—

(1) To construct latrines	24,299
(2) To repair latrines	2,436
(3) To convert pit into pail latrines	286

	Bored-hole.	Deep Pit.	Mound Latrines.	Pail Latrines.
(*b*) Number of latrines—				
(1) Completed ..	312 ..	13,639 ..	263 ..	3,687
(2) Repaired	— ..	545 ..	3 ..	306
(3) Pit latrines converted into pail latrines ..	— ..	— ..	— ..	101
(*c*) Number of persons who failed to comply with the requirements of the notice ..	..	..	..	11,928
(*d*) Number of prosecutions entered	..	..	..	2,824

The following statement shows the work done in connection with the latrine construction in the various provinces during the year 1936:—

Province.	No. of new Latrines constructed.				No. of old Latrines improved by the introduction of Cement Concrete Squatting Plates.				No. of Pit Latrines converted into Pail Latrines with Cement Cconcrete Squatting Plates.	Squatting Plates.	
	Bored-hole.	Deep Pit.	Mound.	Pail.	Bored-hole.	Deep Pit.	Mound.	Pail.		Made.	Sold.
Western ..	131 ..	5,519 ..	71 ..	1,782 ..	— ..	248 ..	1 ..	19 ..	45 ..	8,221 ..	7,338
Central ..	67 ..	2,382 ..	14 ..	566 ..	— ..	64 ..	— ..	123 ..	8 ..	1,100 ..	788
Southern ..	48 ..	1,836 ..	75 ..	203 ..	— ..	76 ..	2 ..	10 ..	30 ..	2,550 ..	2,052
Northern ..	— ..	372 ..	70 ..	322 ..	— ..	11 ..	— ..	23 ..	4 ..	1,014 ..	918
North-Western ..	— ..	1,721 ..	25 ..	191 ..	— ..	31 ..	— ..	13 ..	4 ..	1,209 ..	1,033
North-Central ..	31 ..	15 ..	— ..	89 ..	— ..	— ..	— ..	40 ..	— ..	145 ..	144
Eastern ..	— ..	18 ..	— ..	260 ..	— ..	— ..	— ..	— ..	3 ..	219 ..	238
Uva ..	3 ..	344 ..	— ..	169 ..	— ..	32 ..	— ..	51 ..	3 ..	705 ..	611
Sabaragamuwa ..	32 ..	1,436 ..	8 ..	105 ..	— ..	83 ..	— ..	27 ..	4 ..	2,288 ..	1,990
Total ..	312	13,639	263	3,687	—	545	3	306	101	17,451	15,112

Disposal of Night Soil.—In Sanitary Board and Urban District Council towns night soil is disposed of usually by trenching on sites specially selected. The trenching grounds are regularly inspected and maintained in good order. In the Nuwara Eliya District except for 2 out of 10 Sanitary Board towns the difficulty of providing satisfactory trenching grounds still continues. In these towns the night soil is trenched among tea bushes. At Talaimannar and Diyatalawa night soil is incinerated. Disposal of night soil by composting is carried out in the following towns:—Kurunegala, Panadure, Wadduwa, Horana, Dehiwala, Mount Lavinia, Wattegama, Jaffna, Anuradhapura, Nawalapitiya, Dondra, Kadugannawa, Kolonnawa, Moratuwa, and Beruwala. Composting was tried in the Urban District Council town of Nuwara Eliya but was stopped owing to the fly nuisance. At Hatton it had to be discontinued as there were no buyers.

The following statement shows the number of towns that dispose of their night soil by trenching:—

Urban District Council towns	18
Sanitary Board towns	94

Scavenging and disposal of Refuse.—Scavenging was carried out in all Sanitary Board and Urban District Council towns under the supervision of Sanitary Inspectors. The work has been satisfactorily done. The refuse from residential and trade premises is stored in sanitary dust bins and left by the roadside for removal by scavenging carts.

The following statement shows the number of towns and their methods of disposal of refuse:—

(1) By dumping—	
Urban District Council towns	10
Sanitary Board towns	27
(2) By burial in trenches—	
Urban District Council towns	3
Sanitary Board towns	15
(3) By incineration—	
Urban District Council towns	5
Sanitary Board towns	55
(4) By composting—	
Urban District Council towns	9
Sanitary Board towns	3

Water Supplies.—The question of a pure and adequate water supply is a very important one and much work has been done in the investigation of proposed supplies and the augmentation of existing supplies.

Soil surveys were made to ascertain suitable well sites for water supplies to the Aranayaka hospital, the Government quarters at Vavuniya, Kataragama Temple, the Agricultural Station at Wariapola, and the Leper Asylum, Hendala.

A new impounding reservoir was constructed at Nawalapitiya to overcome the shortage of water experienced by the town and railway.

The chlorinator installation at Diyatalawa and Ragama were readjusted. The unserviceable gas feed chlorinator in the Haputale water supply was replaced by a solution feed instrument. The original schemes for water supply to Hanguranketa and Ampitiya were revised. The proposals for the purification works for the Chilaw water supply were commented on. Reports on the sanitary aspect of 30 water supplies were submitted by the Sanitary Engineer.

The majority of towns in the low-country obtain their water supply from wells. The greater number of them however are shallow unprotected wells and action was taken to protect them whenever possible. The following towns are provided with pipe-borne supplies:—Mannar, Nawalapitiya, Hatton, Norwood, Pussellawa, Bogawantalawa, Maskeliya, Chilaw, Puttalam, Peliyagoda (for part of the town), Batticaloa, Ratnapura, Kahawata, Matale, Wattegama, Nuwara Eliya, Talawakele, Pundaluoya, Kandapola, Nanu-oya, Dimbulla, Lindula, Agrapatana, Badulla, Bandarawela, Haputale, Haldummulla, Koslanda, Passara, Lunugala, Welimada, and the three Municipal towns of Colombo, Galle, and Kandy.

Public Wells.—119 were built during the year as shown below:—

Province.	Number built.
Western	3
Southern	13
Northern	23
Central	5
North-Central	2
North-Western	6
Eastern	5
Uva	33
Sabaragamuwa	29
Total	119

Private Wells.—The following statement shows the work done in connection with private wells:—

	W. P.	C. P.	S. P.	N. P.	N.-W.P.	N.-C.P.	Uva.	Sab.	E. P.	Total.
No. of inspections made	95,618	10,170	12,664	19,563	17,531	1,847	370	9,137	8,998	165,898
No. of wells found unprotected	39,093	3,864	5,150	3,008	4,220	180	125	3,637	3,108	62,385
No. of notices served	154	—	—	28	69	—	—	41	—	292
No. of wells improved	825	48	129	183	203	2	29	121	127	1,667
No. of persons prosecuted	9	—	—	3	—	—	—	1	3	16
No. of persons convicted	8	—	—	—	—	—	—	1	3	12

It will be observed that there is an increase in the number of wells improved by 98 as compared with figures of 1935.

Examination of Water Supplies.—The following statement gives the number of samples of water taken for analysis and the number found unfit for consumption:—

Province.	Number of Samples sent for Examination.		Number of Samples found Unfit.	
	Bacteriological.	Chemical.	Bacteriological.	Chemical.
Western	12	5	2	4
Central	23	5	15	—
Southern	4	4	1	1
Northern	—	4	—	—
North-Western	5	5	1	—
Sabaragamuwa	5	4	—	—
Total	49	27	19	5

Safeguarding of private water supplies which are chiefly from wells in rural areas still continues to be a difficult problem for lack of proper legislation. Tactful persuasion and education have been responsible for whatever has been done in this direction.

Licensed Trades.—The following is a statement of the applications for licensed trades:—

		No. of Applications.	
		Received.	Recommended.
(1) *Food and drink handling establishments—*			
1.	Bakeries	832	695
2.	Tea and coffee boutiques	2,577	2,394
3.	Eating-houses	732	710
4.	Dairies	489	437
5.	Butchers' stalls	366	338
6.	Fish stalls	137	136
7.	Pork stalls	20	20
8.	Aerated water manufactories	21	20
9.	Vegetable stalls	250	148
(2) *Licensed Trade Premises—*			
1.	Public galas	61	57
2.	Manure stores	26	26
3.	Soap manufactories	6	6
4.	Hide stores	15	15
5.	Lime kilns	44	39
6.	Brick kilns	13	12
7.	Laundries	272	237
8.	Cabook quarries	3	3
9.	Metal quarries	14	14
10.	Public bathing places	39	32
11.	Pits for soaking coconut husks	18	18
12.	Fibre mills	20	18
13.	Desiccating mills	17	17
14.	Tanneries	2	2
15.	Salt fish stalls	30	26

In Sanitary Board and Urban District Council towns, all food handling trades (viz., bakeries, tea and coffee boutiques, eating-houses, dairies, vegetable, fish and meat stalls) are licensed yearly on the recommendation of the Medical Officer of Health.

The Sanitary Inspectors of the area visit the trade premises regularly and see that they are maintained in a clean and sanitary state.

Maintenance of Sanitary Conditions of Licensed Trades Premises.—

(*a*) Number of premises inspected	8,351
(*b*) Number of notices served for breach of rules	2,039
(*c*) Number of notices voluntarily complied with including notices served in 1935	2,383
(*d*) Number of persons prosecuted	393
(*e*) Number of persons convicted	289
(*f*) Number of persons warned and discharged	113

In (*e*) and (*f*) it will be noted that the totals exceed the number of prosecutions. This is due to the decision of some of the pending cases in 1935.

Sanitary Inspections.—The inspection of private premises constitutes one of the routine duties of the Sanitary Inspector. In the course of his inspection, he endeavours as much as possible to get premises cleaned up in his presence, collections of rubbish burnt and buried and other defects attended to whenever practicable. Though it entails more time, this method has always proved very satisfactory and is being encouraged. In addition to his work, he gives talks on sanitation and personal hygiene to groups of villagers while on inspection.

The following is a statement of work done:—

(*a*) *Private Premises.*—

	W. P.	C. P.	S. P.	N. P.	E. P.	N.-C. P.	N.-W. P.	Uva.	Sab.	Total.
Inspections made during the year	365,961..	113,660..	97,836..	84,732..	33,670..	6,853..	95,287..	44,624..	62,324..	604,647
No. of premises found insanitary	161,323..	39,074..	31,028..	22,711..	12,590..	1,505..	25,196..	18,796..	22,921..	325,144
No. of mosquito breeding places detected	55,016..	7,930..	4,159..	3,353..	2,002..	73,847..	30,718..	1,685..	32,989..	211,699
No. of fly breeding places detected	15,320..	12,875..	4,519..	639..	833..	1,869..	2,481..	764..	5,085..	44,025
No. of notices served to abate nuisance	551..	393..	502..	163..	171..	80..	613..	287..	1,243..	3,390
No. of nuisances abated without prosecution	35,674..	5,218..	8,100..	3,288..	2,614..	72..	1,995..	1,131..	2,442..	60,534
No. of persons prosecuted	83..	38..	47..	25..	29..	8..	16..	19..	18..	283
Number of persons convicted	12..	32..	18..	23..	14..	6..	9..	16..	15..	145
Number of persons warned and discharged	11..	6..	28..	— ..	13..	2..	6..	3..	2..	71

Drainage.—Provision of drains in towns is a matter of urgency but it has not received the attention that it should. Proper drainage schemes will eliminate the collections of storm water and swampy lands and together with filling work will eliminate many potential and actual breeding places of mosquitoes. There are some towns like Chilaw, Negombo, Weligama, Jaffna, all of which are below sea level where pumping schemes will be required. It may be stated that there are very few towns in the Island that can boast of a complete drainage scheme. Most of the towns have only cement drains partially provided.

The following statement shows the towns and bazaar areas by provinces supplied with drains and the lengths of drains so provided:—

Province.	No. of Towns and Bazaars.	No. provided with cement Drains.		Completely.	Partially.	Length in Feet.
		Yes.	No.			
Western ..	34 ..	24 ..	10 ..	2 ..	22 ..	53,934
Central ..	47 ..	40 ..	7 ..	11 ..	29 ..	119,433
Southern ..	14 ..	7 ..	7 ..	2 ..	5 ..	14,371
Eastern ..	1 ..	1 ..	— ..	— ..	1 ..	2,250
North-Central ..	1 ..	1 ..	— ..	1 ..	— ..	12,128
North-Western ..	8 ..	8 ..	— ..	1 ..	7 ..	10,210
Northern ..	8 ..	8 ..	— ..	— ..	8 ..	1,100
Uva ..	12 ..	12 ..	2 ..	5 ..	7 ..	12,957
Sabaragamuwa ..	24 ..	24 ..	36 ..	2 ..	22 ..	23,043

(*b*) *Railway Premises.*

	Inspected.	Defective.	Defects remedied.
(1) Of stations—			
Premises	158 ..	452 ..	436
Drains	156 ..	298 ..	281
Latrines	310 ..	390 ..	366
Mosquito breeding places ..	156 ..	106 ..	109
Water supplies ..	101 ..	162 ..	120
Scavenging ..	63 ..	248 ..	245
Conservancy ..	81 ..	244 ..	243
(2) Of bungalows—			
Premises	624 ..	834 ..	802
Drains	591 ..	435 ..	398
Latrines	783 ..	492 ..	455
Mosquito-breeding places ..	1,510 ..	1,410 ..	1,360
Water supplies ..	285 ..	141 ..	131
Scavenging ..	230 ..	239 ..	237
Conservancy ..	245 ..	17 ..	213
(3) Of lines—			
Premises	737 ..	1,357 ..	1,309
Drains	402 ..	574 ..	474
Latrines	437 ..	614 ..	453
Mosquito-breeding places ..	11,378 ..	11,350 ..	11,033
Water supplies ..	151 ..	217 ..	145
Scavenging ..	167 ..	291 ..	289
Conservancy ..	218 ..	270 ..	268

The following statement gives particulars of offences against sanitary regulations for which people have had to be prosecuted:—

Offences.	Number. Prosecuted.	Convicted.
Erection of unauthorized buildings	260 ..	224
Failing to demolish temporary sheds	37 ..	29
Occupying buildings after compulsory closure ..	27 ..	21
Occupying buildings without certificate of conformity	101 ..	70
Failing to improve insanitary houses	66 ..	62
Deviating from approved plan	37 ..	29
Sinking wells without permission of the Chairman, Sanitary Board	2 ..	2
Faecal pollution	141 ..	117
Carrying on trades without permission	689 ..	637
Depositing rubbish in drains	103 ..	61
Depositing rubbish in public roads	46 ..	40
Failing to clear rank vegetation	57 ..	27
Failing to provide dust bins	69 ..	48
Exposing for sale food on roadside	66 ..	64
Exposing food to the contamination of flies ..	132 ..	90
Exposing for sale food unfit for human consumption ..	88 ..	66
Failing to notify cases of infectious diseases ..	68 ..	60

3.—SCHOOL HEALTH WORK.

Schools and School Population.—The number of schools (excluding the unregistered and special type) is about 4,625 and the school population amounts to 673,523. The total number of schools in which health work has been carried out during the year increased from 1,538 in 1935 to 1,779 in 1936. Of these were 454 primary, 1,093 junior secondary, 203 senior secondary, 29 collegiate; 410 boys, 380 girls, 989 mixed schools; 647 Government, 1,082 Government aided, 50 unaided schools. These schools are distributed by provinces as follows:—Western 917, Central 251, Southern 166, Northern 77, Eastern 93, North-Central 8, North-Western 176, Uva 20, Sabaragamuwa 71.

The total school population dealt with in those schools amounts to 341,804, of which 201,087 are boys and 140,717 girls; 61,692 in primary, 221,528 in junior secondary, 48,279 in senior secondary, 10,305 in collegiate schools; 127,706 Government, 210,104 aided, 3,994 unaided. The school population dealt with classified by provinces is as follows:—Western 187,786, Central 45,871, Southern 39,290, Northern 14,143, Eastern 11,072, North-Central 958, North-Western 26,444, Uva 3,489, Sabaragamuwa 12,751.

Personnel.—The personnel engaged on school health work during the year consisted of 6 School Medical Officers, 27 Medical Officers of Health, 21 District Medical Officers, and 9 School Nurses. They were distributed according to provinces as follows:—

TABLE 1.

Personnel

Province.	School Medical Officer.	Medical Officers of Health.	Medical Officer.	Nurses.
Western	2 ..	9 ..	1 ..	4
Central	2 ..	4 ..	7 ..	1
Southern	1 ..	4 ..	2 ..	2
Northern ..	1 ..	1 ..	4 ..	2
Eastern	— ..	2 ..	1 ..	—
North-Central ..	— ..	1 ..	— ..	—
North-Western ..	— ..	3 ..	— ..	—
Uva	— ..	1 ..	4 ..	—
Sabaragamuwa ..	— ..	2 ..	2 ..	—
	6	27	21	9

Visits to Schools.—Of 454 primary schools and 1,296 secondary schools 388 and 1,038 were respectively visited for school survey, medical inspection, hookworm treatment, &c. Total visits paid number 7,597 or 5.3 per school.

Activities carried out: (1) *Medical Inspection of School Children.*—52,629 children in 1,426 schools were medically examined in the year, as compared with 35,813 children in 1,209 schools in 1935. This gives an increase of about 47 per

cent. over the previous year's figures. Malaria epidemic having subsided more intensive attention to this work by Medical Officers and Medical Officers of Health on the one hand and increased attendance at schools by the scholars on the other would account for the increase. Of the children examined 31,572 or 59.9 were boys, 21,057 or 40.1 per cent. were girls, 13,597 or 25.8 per cent. were from primary, 30,657 or 58.2 per cent. from junior secondary, 6,966 or 13.2 per cent. from senior secondary, 1,309 or 2.8 per cent. from collegiate schools.

Table 2.

Scholars Examined.

Provinces.	Total.	Boys.	Girls.	Primary.	Junior Secondary.	Senior Secondary.	Collegiate.
Western ..	22,994	12,557	10,437	4,804	13,975	3,055	1,160
Central ..	6,054	3,559	2,495	917	4,164	973	—
Southern ..	5,123	3,381	1,742	1,866	2,528	729	—
Northern ..	5,937	3,183	2,754	1,816	2,639	1,333	149
Eastern ..	3,669	2,610	1,059	2,107	1,009	553	—
North-Central ..	685	278	407	685	—	—	—
North-Western ..	5,248	4,122	1,126	205	4,889	154	—
Uva ..	957	669	288	524	333	—	—
Sabaragamuwa ..	1,962	1,213	749	673	1,120	169	—
Total ..	52,629	31,572	21,057	13,597	30,657	6,966	1,309

Of 52,629 children examined, 41,256 or 78.5 per cent. received the first examination, 4,458 or 8.4 per cent. received the second, 2,795 or 5.3 per cent. received the third, and 4,120 or 7.8 per cent. received special examinations; 38,483 or 70.5 were found to be defective with 73,757 defects or 1.9 defects per defective child, as shown in the table below:—

Table 3.

Province.	Schools examined.	First.	Second.	Third.	Special.	Total.	Number Defective.	Percentage. Defective.	Number of Defects.	Defects per defective Child.
Western ..	732..	22,001..	771..	211..	11..	22,994..	17,842..	77·5..	32,638..	1 8
Central ..	202..	5,182..	363..	256..	253..	6,054..	5,066..	83·6..	13,484..	2·6
Southern ..	166..	3,953..	884..	212..	74..	5,123..	2,510..	48·9..	3,754..	1·4
Northern ..	75..	2,662..	1,305..	1,935..	35..	5,937..	4,968..	83·6..	11,095..	2·2
Eastern ..	89..	3,455..	212..	2..	— ..	3,669..	2,805..	76·4..	4,074..	1·4
North-Central ..	8..	397..	179..	51..	58..	685..	649..	94·7..	1,515..	2·3
North-Western ..	69..	1,072..	534..	96..	3,546..	5,248..	2,807..	53·4..	4,078..	1·4
Uva ..	17..	889..	— ..	— ..	68..	957..	292..	37·5..	352..	·5
Sabaragamuwa ..	68..	1,645..	210..	32..	75..	1,962..	1,544..	78·7..	2,767..	1·4
Total ..	1,426	41,256	4,458	2,795	4,120	52,629	38,483	70.5	73,757	1·9

For 1935 the defects per defective child were 1.8 but on consulting the table of " defects found " for 1936 and comparing the same with that for 1935 it will be observed that defects like malnutrition, enlarged spleen, anaemia—sequela of the malaria epidemic—have contributed much more than can be accounted for by the increased number of scholars examined. If it were possible to exclude these, defects per defective child would have shown a reduction in the year under review.

The examinations of scholars by different groups of Medical Officers were as follows:—

Table 4.

Province.	School Medical Officers. 6	District Medical Officers of Health. 19	Health Unit Medical Officers of Health. 8	Medical Officers. 21
	No. of Scholars.			
Western ..	10,103	1,574	10,929	388
Central ..	3,725	372	1,250	707
Southern ..	3,599	939	585	—
Northern ..	4,889	1,048	—	—
Eastern ..	—	2,318	436	915
North-Central ..	—	685	—	—
North-Western ..	—	4,766	482	—
Uva ..	—	289	—	658
Sabaragamuwa ..	—	987	861	114
Total ..	22,316	12,978	14,543	2,782

(2) *Correction of Defects.*—The following two tables give the nature of defects detected at the medical inspection of children, the percentage each forms to total defects, defects corrected and their percentages:—

TABLE 5.

Defects found.

Defects.	Total.	Percentage each Defect forms to Total Defects.	Defects found at								
			W. P.	C. P.	S. P.	N. P.	E. P.	N.-C. P.	N.-W. P.	Uva.	Sab.
Malnutrition	7,403	10·3	3,519	631	574	1,913	98	12	171	6	473
Uncleanliness	5,309	7·1	1,814	1,245	30	1,910	—	16	271	8	15
Unvaccinated	2,657	3·6	1,234	495	177	412	49	48	66	7	169
Eyes	716	·9	348	178	111	20	27	25	2	2	3
Ears	840	1·1	154	604	17	38	10	9	1	2	5
Defective vision	1,155	1·5	575	235	55	120	10	58	46	13	43
Defective hearing	48	·06	20	15	5	6	1	—	—	—	1
Enlarged glands	969	1·3	807	31	3	29	—	90	—	—	9
Enlarged spleen	2,640	3·5	—	608	188	43	608	—	1,140	53	—
Lymph glands	1,207	1·6	2	1,151	2	—	51	—	1	—	—
Dental caries	5,405	7·4	4,283	163	170	—	492	—	—	93	204
Teeth and gums	12,948	17·5	4,832	3,402	710	2,296	516	296	454	51	391
Nose	298	·4	197	17	3	44	18	10	8	1	—
Adenoids, Tonsils	4,032	5·4	1,808	1,144	185	444	122	58	59	21	191
Anæmia	4,189	7·3	2,575	801	167	180	303	94	42	2	25
Heart	193	·2	53	49	1	14	55	5	8	—	8
Lungs	139	·1	68	35	10	7	14	2	3	—	—
Hernia	8	·01	2	2	—	1	1	—	2	—	—
Orthopaedic	88	·1	31	31	12	11	2	—	—	—	1
Nervous system	21	·02	6	1	1	6	3	3	—	—	1
Rickets	10	·01	2	—	—	—	—	—	—	—	8
Skin	1,504	2·	878	227	52	190	27	29	80	17	4
Scalp	118	·1	29	14	—	21	43	3	8	—	—
Hookworm	11,559	15·6	6,580	282	386	1,782	716	12	1,271	15	515
Malaria	1,471	2·	57	205	25	53	151	489	288	4	199
Abnormal behaviour	6	·008	—	2	—	3	1	—	—	—	—
Mental deficiency	25	·03	3	6	1	15	—	—	—	—	—
Speech	59	·08	19	18	—	12	2	8	—	—	—
Scabies	1,542	2·	497	129	78	555	216	48	12	1	6
Pediculosis	5,158	7·3	1,605	1,542	540	674	256	145	56	17	423
Ringworm	38	·05	18	—	1	3	9	1	6	—	—
Other defects	1,902	2·5	622	221	250	293	273	54	83	39	67
Total	73,757		32,638	13,484	3,754	11,095	4,074	1,515	4,078	352	2,767

TABLE 6.

Defects corrected.

Defects.	Total Defects found.	Total Defects corrected.	Percentage corrected.	Defects corrected at							
				W.P.	C. P.	S. P.	N. P.	E. P.	N.-W.P.	N.-C.P.	Uva.	Sab.
Malnutrition	7,403	1,552	20·9	792	129	308	234	15	2	37	—	35
Uncleanliness	5,309	2,679	50·4	741	661	30	1077	—	15	145	6	4
Unvaccinated	2,657	934	35·1	404	105	96	154	43	35	26	3	68
Eyes	716	176	24·5	87	22	50	2	10	3	—	2	—
Ears	840	345	41·	89	244	3	3	4	—	—	—	2
Defective vision	1,155	145	12·5	58	22	21	22	2	5	3	—	12
Defective hearing	48	—	—	—	—	—	—	—	—	—	—	—
Enlarged glands	969	137	14·1	126	9	1	1	—	—	—	—	—
Enlarged spleen	2,640	379	14·5	—	116	—	16	186	—	60	1	—
Lymph glands	1,207	225	18·5	—	204	—	—	21	—	—	—	—
Dental caries	5,405	940	17·3	784	6	12	—	125	—	—	3	10
Teeth and gums	12,948	1,565	12·	378	505	99	142	247	5	154	12	23
Nose	298	80	26·7	52	4	—	14	7	—	2	1	—
Tonsils and Adenoids	4,032	650	16·1	315	146	29	48	35	—	10	—	67
Anaemia	4,189	1,153	22·2	704	141	58	63	120	55	10	2	—
Heart	193	37	29·1	8	1	1	3	24	—	—	—	—
Lungs	139	33	23·7	12	6	10	—	4	—	1	—	—
Hernia	8	—	—	—	—	—	—	—	—	—	—	—
Orthopaedic	88	16	18·1	4	2	3	7	—	—	—	—	—
Nervous system	21	7	33·3	2	—	—	5	—	—	—	—	—
Rickets	10	—	—	—	—	—	—	—	—	—	—	—
Skin	1,504	270	17·9	134	55	32	8	—	14	21	5	1
Scalp	118	29	24·5	4	—	—	4	17	3	1	—	—
Hookworm	11,559	5,510	47·6	2,745	106	344	535	495	12	929	14	330
Malaria	1,471	972	66·	28	85	25	11	121	489	115	4	94
Abnormal behaviour	6	2	33·3	—	—	—	2	—	—	—	—	—
Mental deficiency	25	1	4·	1	—	—	—	—	—	—	—	—
Speech	59	3	5·	3	—	—	—	—	—	—	—	—
Scabies	1,542	850	55·1	252	56	71	286	154	18	6	1	6
Pediculosis	5,158	2,439	47·2	703	536	348	243	148	145	26	2	288
Ringworm	38	20	52·6	13	—	—	1	6	—	—	—	—
Other defects	1,902	830	43·6	396	63	35	143	153	6	15	11	8
Total	73,757	21,979		8,835	3,224	1,576	3,024	1,937	807	1,561	67	948

The more common defects found at inspections exclusive of uncleanliness were disease of teeth and gums (17.5 per cent.), hookworm (15.6 per cent.), malnutrition (10.3 per cent.), dental caries (7.4 per cent.), anaemia (7.3 per cent.), pediculosis (7.3 per cent.), tonsils and adenoids (5.4 per cent.), enlarged spleen (3.5 per cent.). These eight defects constituted 73.6 per cent. of the total defects.

Diseases of Teeth and Gums.—Exclusive of dental caries other defects of teeth and gums contributed the highest figure for physical defects of school children. The chief disease affecting the teeth and gums is salivary calculus. In 1935 the figure for this defect was 17.6 per cent. and it appears that though a larger number of children have been examined in 1936 this defect forms about the same percentage to the total as for the previous year. Added to this, dental caries was found in 5,405 children, giving a percentage of 7.4 to total defects. The two together constituted 24.8 per cent. of the total defects found. Of the total 12,948 defects of teeth and gums 1,565 or 12 per cent. were corrected. Of 5,405 cases of dental caries 940 or 17.3 per cent. were completely corrected. It will be seen from table showing work done at clinics that in addition to 940 defects of dental caries completely corrected 2,719 defects were dealt with and partial correction effected. Bulk of the work was done in the Western Province where facilities for dental care are available in a greater measure. Of 940 complete corrections of dental caries 784 or 83.4 per cent. and of 2,719 partial corrections 2,262 or 83 per cent. were done in the Western Province.

In addition to the facilities available in the Government institute in Colombo, properly equipped dental chambers provided at the different colleges mentioned below have helped considerably in getting dental defects corrected. A new Dental Chamber has been provided in the year under review at Milagiriya Girls' School, Colombo.

Owing to lack of facilities very few complete corrections could have been made in the Southern and the Central Provinces. With the appointment of Dental Surgeons in the places in the coming year it is expected that it will be possible to show better progress in this direction.

The following is a statement of work done in the Dental Chamber attached to each of the following colleges:—

Table 7.

	Inspections.	Extractions.	Fillings.	Dressings.	Scalings.
(1) St Peter's College ..	234	165	392	27	45
(2) Good Shepherd Convent ..	232	112	50	32	15
(3) Zahira College ..	297	..not available			
(4) Milagiriya Girl's English School ..	—	649	204	—	—
(5) St. Thomas' College ..	825	329	367	—	129
Total ..	1,588	1,255	1,013	59	189

Where one visit a week by the dentist has been found to be inadequate the school authorities have been requested to make arrangements for two visits per week. This will enable a larger number of defects to be corrected and also secure closer attention to individual pupils.

Hookworm Infestation.—Next to disease of teeth and gums hookworm infestation is the most common defect. 11,559 or 21.9 per cent. of the total number of children examined were found infested with hookworm. This defect forms 15.6 per cent. of the total defects. The diagnosis is chiefly based on visual inspection of the case other clinical symptoms and signs and it is only a small percentage that has been diagnosed on microscopical examination of stools. Of 11,559 children 5,510 or 47.6 per cent. were corrected. In addition to these 3,956 children received treatment at clinics. Mass treatment of hookworm is carried out in schools as a seasonal activity every year in areas under the School Medical Officers and Medical Officers of Health.

Malnutrition.—This condition formed 10.3 per cent. of the total defects found in school children. Of the children examined 14 per cent. manifested a state of under-nourishment. The indices on which this diagnosis was based were the weight

for the age of the child and other clinical signs of lack of growth and development. In the absence of a surer but simpler index, weight for the respective age and average height of the child has been worked upon. At the same time one has to bear in mind the chances of errors in the form of the personal factor of the examining officer, the inaccuracy of the ages stated, &c., before accepting these figures as a rigidly correct estimate of the condition.

Of 7,403 children showing this condition 1,552 or 20.9 per cent. have been corrected.

Vitamin " A " Deficiency.—Medical Officers have kept a sharp watch over this condition in school children during medical inspection. Attempts have been made by them to correct it whenever possible by the administration of cod liver oil.

Provision of mid-day meal in schools has been developed as a routine measure in connection with health education procedures. In a few instances a complete meal has been served and in others nourishment in the form of light meal of soup and bread, cup of milk, cunjee, &c., has been given. Funds have been secured through the help of Parent-Teachers Association and other voluntary grants from local bodies such as Municipal Councils, Urban District Councils. The following table gives the work done in this connection by provinces.

Mid-day Meals by provinces.—

Province	W. P.	C. P.	S. P.	N. P.	E. P.	N.-C. P.	N.-W. P.	Uva.	Sab.	Total.
Number of schools	114	156	31	18	18	—	150	3	30	520

Tonsils and Adenoids.—Tonsils and adenoids contributed 5.4 per cent. of the total defects. In 7.6 per cent. of children examined this defect was revealed. In 650 children this defect was corrected, giving a percentage of 16.1.

Pediculosis.—5,158 children (9.8 per cent. of children examined) were found with this condition. The majority were girls.

Anaemia.—5,189 children were found showing varying degrees of anaemia. They were apparently the result of malaria, hookworm, or the generally poor condition of health or a combination of all. In 1,153 or 22.2 per cent. of the children the defects were corrected.

Malaria.—1,471 children or 2.7 per cent. of the total examined were found to suffer from this illness. In addition to this 2,610 or 4.9 per cent. of children were found with enlarged spleen. In the absence of any other specific cause these may be taken as cases of past infection of malaria. The two together give 7.7 per cent. of children showing this defect. They form 5.5 per cent. of the total defects. This figure is not an accurate estimate of the children actually infected with malaria as in many instances children suffering from the disease at the time of medical inspection were absent from the school. Sixty-six per cent. of the defects were corrected for malaria and 14.5 of the cases of enlarged spleen were corrected.

Uncleanliness.—5,309 children or 10 per cent. of children examined showed this defect. This condition formed 7.1 per cent. of the total defects. 50.4 per cent. of this defect were corrected at school clinics by the school health nurses with the assistance of the teachers.

Scabies.—1,542 children or 2.9 per cent. of those examined were found with this condition. This defect formed 2 per cent. of the total defects. 850 of this defect or 55.1 per cent. were corrected by the nurses at the school clinics.

Ophthalmic defects.—1,871 children or 3.5 per cent. of those examined showed some defect of the eye. Of these, 1,155 or 2.1 per cent. of those examined had defective vision and 716 or 1.3 per cent. had other defects of the eye. 12.5 per cent. of defects of vision were corrected and of other defects of the eye 24.5 per cent. were corrected.

In addition to the complete correction of defects as shown above much work has been done both at central clinics held in hospitals and dispensaries and in school clinics to give treatment to children showing different defects. These have been shown in the table below giving a statement of work done and conditions dealt with at clinics. Partial corrections have therefore been made of a large number of the different types of defects and after repeated treatments these could be completely corrected and figures given under the table showing

correction of defects. The following statement shows by provinces the centres at which treatment clinics were held, the number of clinics held, and the conditions dealt with at them:—

Table 8.

	W. P.	C. P.	S. P.	N. P.	E. P.	N.-C. P.	N.-W. P.	Uva.	Sab.	Total.
Number of centres ..	60 ..	32 ..	3 ..	36 ..	— ..	— ..	1 ..	5 ..	4 ..	141
Number of clinics held ..	646 ..	106 ..	161 ..	44 ..	— ..	— ..	40 ..	30 ..	6 ..	1,033
Malnutrition ..	1,250 ..	107 ..	398 ..	— ..	— ..	— ..	— ..	— ..	— ..	1,755
Uncleanliness ..	974 ..	382 ..	— ..	463 ..	3 ..	— ..	— ..	6 ..	— ..	1,828
Unvaccinated ..	315 ..	10 ..	— ..	276 ..	— ..	— ..	— ..	16 ..	17 ..	634
Eyes	529 ..	6 ..	140 ..	— ..	— ..	— ..	— ..	— ..	— ..	675
Ear and nose ..	314 ..	— ..	44 ..	— ..	— ..	— ..	— ..	— ..	— ..	358
Enlarged glands ..	— ..	258 ..	— ..	— ..	— ..	— ..	— ..	— ..	— ..	258
Enlarged spleen ..	— ..	150 ..	— ..	— ..	— ..	— ..	— ..	— ..	— ..	150
Tonsils and adenoids ..	438 ..	178 ..	34 ..	— ..	— ..	— ..	— ..	70 ..	— ..	720
Anaemia	1,110 ..	104 ..	— ..	— ..	— ..	— ..	— ..	2 ..	— ..	1,216
Heart	19 ..	— ..	— ..	— ..	— ..	— ..	— ..	— ..	— ..	19
Lungs	39 ..	10 ..	— ..	— ..	— ..	— ..	— ..	— ..	— ..	49
Nervous system ..	— ..	— ..	— ..	— ..	— ..	— ..	— ..	— ..	— ..	—
Skin	52 ..	28 ..	203 ..	— ..	— ..	— ..	— ..	5 ..	— ..	288
Hookworm ..	2,250 ..	678 ..	713 ..	— ..	43 ..	— ..	— ..	258 ..	14 ..	3,956
Malaria	— ..	— ..	— ..	— ..	— ..	— ..	— ..	86 ..	— ..	86
Scabies	772 ..	34 ..	184 ..	993 ..	1 ..	— ..	26 ..	— ..	42 ..	2,052
Pediculosis ..	439 ..	52 ..	— ..	208 ..	— ..	— ..	— ..	— ..	— ..	699
Other diseases ..	2,096 ..	319 ..	1,104 ..	97 ..	— ..	— ..	73 ..	41 ..	— ..	3,730
Dental caries ..	3,046 ..	470 ..	143 ..	— ..	— ..	— ..	— ..	— ..	— ..	3,659
Defective vision ..	153 ..	— ..	23 ..	— ..	— ..	— ..	— ..	— ..	— ..	176
Total ..	13,796	2,786	2,986	2,037	47	—	99	484	73	22,308

(3) *Sanitation.*—Sanitation of schools received very close attention and a routine survey of schools in each area before any school health work is commenced in them has been established. 1,770 schools have been surveyed this year, as against 1,538 schools for 1935. The provision of adequate sanitary latrines, urinals for boys and girls, protected wells, tanks for storage of water, and of individual drinking cups has been more intensively pressed for and as a result of the combined effort of the Medical Officers and the school authorities several schools in each province have now been provided with some or all of the above requirements.

The following table will show the state of sanitation in the schools surveyed:—

Table 9.

	W. P.	C. P.	S. P.	N. P.	E. P.	N.-C. P.	N.-W. P.	Uva.	Sab.	Total
Schools ..	917 ..	251 ..	166 ..	77 ..	89 ..	8 ..	176 ..	15 ..	71 ..	1,770
School children ..	187,786 ..	45,871 ..	38,700 ..	14,143 ..	10,624 ..	958 ..	26,444 ..	2,579 ..	12,751 ..	339,856
Schools with latrines ..	820 ..	223 ..	111 ..	74 ..	81 ..	8 ..	175 ..	15 ..	64 ..	1,571
Total seats ..	2,057 ..	332 ..	280 ..	256 ..	149 ..	22 ..	328 ..	69 ..	173 ..	3,666
Schools with urinals ..	128 ..	22 ..	28 ..	10 ..	24 ..	2 ..	26 ..	2 ..	4 ..	246
Total urinal compartments	262 ..	22 ..	122 ..	104 ..	31 ..	3 ..	59 ..	2 ..	13 ..	618
Schools with protected wells ..	453 ..	68 ..	85 ..	10 ..	45 ..	6 ..	111 ..	1 ..	32 ..	811

(4) *Health Education.*—The training of teachers in school health work is an essential requirement for developing the proper procedures of health education and health instruction in schools. In order to place this work on a proper basis a scheme of syllabus of lectures and demonstrations was drawn up in consultation with the Department of Education and all Medical Officers of Health and School Medical Officers instructed to hold training class for teachers in the training schools in their respective areas. In addition to these teachers' classes have also been held in various centres by the School Medical Officers and Medical Officers of Health for teachers in the rural scheme schools and other village schools.

Twenty-two training classes were held during 1936, as against 20 in 1935, and the number of teachers trained in 1936 was 876, as against 627 in 1935.

Table 10.

Health Education.

Province.	Number of Training Classes.	Number of Teachers Trained.	Province.	Number of Training Classes.	Number of Teachers Trained.
Western ..	10 ..	363	North-Western ..	1 ..	60
Central ..	3 ..	76	Uva	— ..	—
Southern ..	2 ..	119	Sabaragamuwa ..	1 ..	56
Northern ..	2 ..	117		—	—
Eastern ..	3 ..	85		22	876
North-Central ..	— ..	—		—	—

The following tables show the routine health education procedure, health instruction and other activities connected with health education, carried out in the schools in the different provinces:—

TABLE 11.

Number of Schools carrying out Procedure.

Health Education Procedures.	W. P.	C. P.	S. P.	N. P.	E. P.	N.-C. P.	N.W. P.	Uva.	Sab.	Total for 1936.	Total for 1935.
1. Daily morning inspection	712	211	128	66	56	8	53	17	58	1,309	1,116
2. Scoring of health habit booklet	386	90	59	21	24	—	16	8	31	635	336
3. Weighing and measuring	207	48	17	7	12	8	20	2	23	344	378
4. Use of handkerchief	196	50	30	19	6	6	26	3	15	351	213
5. Proper storage of drinking water	325	96	54	47	25	8	46	14	31	646	554
6. Use of individual drinking cup	172	35	22	6	2	5	19	4	28	293	274
7. Pupil participation, &c.	295	127	43	47	16	1	32	7	34	602	373
8. Mid-day meal	114	156	31	18	18	—	150	3	30	520	541
9. Health clubs	10	1	2	—	—	1	—	—	—	14	49
0. Organized play	448	163	85	61	25	7	51	12	51	903	567

TABLE 12.

Number of Schools carrying out Instruction.

Health Instruction.	W. P.	C. P.	S. P.	N. P.	E. P.	N.-C. P.	N.-W. P.	Uva.	Sab.	Total for 1936.	Total for 1935.
1. Direct teaching	560	198	88	66	46	8	45	14	52	1,077	886
2. Teaching by correlation	403	104	94	7	24	8	13	3	40	676	562
3. Posters, scrap books, &c.	184	69	34	4	11	6	12	1	19	340	246
4. Dramatization	62	16	6	—	2	1	13	—	1	101	66
5. Health songs and debates	93	42	8	4	11	—	—	4	—	162	62
6. Field visits	200	42	15	5	13	1	8	—	18	302	162

TABLE 13.

Other Activities.	W. P.	C. P.	S. P.	N. P.	E. P.	N.-C. P.	N.-W. P.	Uva.	Sab.	Total
Parent-Teachers, &c.	178	112	16	16	19	4	7	4	11	367
School health demonstrations	59	—	6	—	8	1	—	2	1	67

It is observed that every year increased progress is being made in the carrying out of the routine health education procedures and health instruction in schools. Not only a larger number of schools have carried out these activities but the quality of work has also improved.

(5) *Control of Communicable Diseases.*—The reported incidence of communicable diseases in schools by provinces is as follows:—

TABLE 14.

Province.	Chickenpox.	Diphtheria.	Dysentery.	Enteric.	Measles.	Mumps.	Phthisis.	Whooping Cough.
Western	210	1	14	14	76	130	—	4
Central	66	1	12	5	140	193	—	17
Southern	21	—	5	11	1	13	—	—
Northern	—	—	—	—	—	—	—	—
Eastern	9	—	1	5	22	64	—	7
North-Central	—	—	—	—	—	—	—	—
North-Western	8	—	1	4	48	4	1	24
Uva	3	—	—	1	—	11	—	—
Sabaragamuwa	9	1	1	9	24	—	6	6
Total	326	3	34	49	311	415	7	58

Compared with the figures for 1935 the incidence of communicable diseases in schools for the year under review has been greater. Larger number of cases of chickenpox, measles, mumps occurred in schools in the Western and the Central Provinces. In all, 8 schools were closed owing to the incidence of communicable diseases, 3 in the Central, 2 in the Southern, 1 in the Eastern, and 2 in the North-Western Provinces.

Quinine Administration.—Quinine is administered as a routine prophylactic in schools in hyperendemic areas and the following is a statement of the number of children who received it:—

TABLE 15.

	W. P.	C. P.	S. P.	N. P.	E. P.	N.-C. P.	N.-W. P.	Uva.	Sab.	Total.
Schools	48	36	26	5	22	8	176	12	43	376
Scholars	12,111	6,738	7,883	84	1,809	958	29,502	719	509	60,313

Hookworm Treatment.—Administration of hookworm treatment to school children is carried out as a routine activity by the School Medical Officers and Medical Officers of Health. Almost double the number of school children were treated in 1936 as compared with 1935. In all areas the number of school children treated this year has been larger than that of the previous year. 86,771 children were treated in 887 schools this year, as against 45,987 in 669 schools in 1935.

Table 16.

	W. P.	C. P.	S. P.	N. P.	E. P.	N.-C. P.	N.-W. P.	Uva.	Sab.	Total
Schools	404	162	43	63	64	8	70	18	55	887
Scholars	42,518	17,197	3,511	5,837	4,756	380	6,605	1,394	4,573	86,771

Anti-Typhoid Inoculation.—A total of 8,003 first doses and 6,969 second doses were administered to school children during 1936, as against 5,182 first doses and 4,526 second doses in 1935. Success of anti-typhoid inoculation in schools entirely depends on the voluntary response to this measure but the figures which are rising year after year indicate an increasing appreciation of the benefits derived from it on the one hand and the enhanced co-operation received from the school authorities and the parents on the other.

Table 17.

	W. P.	C. P.	S. P.	N. P.	E. P.	N.-C. P.	N.-W. P.	Uva.	Sab.	Total.
First	3,358	2,158	462	144	—	—	53	—	1,828	8,003
Second	3,016	1,852	398	129	—	—	52	—	1,522	6,969

Anti-Smallpox Vaccination.—A total of 2,854 school children were vaccinated against smallpox, of which 2,392 were primary vaccinations and 462 secondary.

The table of defects found on medical inspection of schools shows that 2,651 school children were found unvaccinated. If the school authorities make it a rule to see that the children are vaccinated prior to admission this defect among school children will cease to be listed year after year.

Table 18.

	W. P.	C. P.	S. P.	N. P.	E. P.	N.-C. P.	N.-W. P.	Uva.	Sab.	Total.
Primary	366	195	105	346	386	331	83	103	477	2,392
Secondary	25	61	—	204	2	12	158	—	—	462
Total	391	256	105	550	388	343	241	103	477	2,854

4.—LABOUR CONDITIONS.

This department is more directly concerned with the sanitary conditions of immigrant labourers on estates than of indigenous labourers as such, because the medical wants of estates are governed by Ordinance No. 9 of 1912, which does not deal with the medical wants of indigenous labour as such. The following report deals with the sanitary conditions of immigrant labourers on estates and the medical facilities available to them:—

Medical Wants on Estates in 1936.

The only change in the number of Government hospitals scheduled to estates was the addition of the Lindula hospital. There were at the end of the year 66 scheduled Government hospitals (exclusive of 4 infectious diseases hospitals which are reckoned as part of the local district hospitals) and 107 Government dispensaries. Eighty-five estates maintained their own private hospitals, as against 84 during last year. 733 estate dispensaries were maintained in 1936, as against 727 in 1935.

Rebates payable to estates which maintained their own hospitals amounted to Rs. 166,613 in 1936, as against Rs. 200,281 in 1935. The value of drugs supplied to estates fell from Rs. 291,830 in 1935 to Rs. 268,782 in 1936.

The statement of revenue and expenditure of the administration of the Medical Wants Ordinance for the year ended September 30, 1936, is as follows:—

REVENUE.			Rs. c.
(*a*) Surplus brought forward from previous statement	..	..	4,332,117 19
(*b*) Amount of all sums recovered as visiting or maintenance fees under section 10			101,166 49
(*c*) Amount of all fines recovered in respect of all offences against the Ordinance		..	—
(*d*) Amount of all sums recovered as the cost price of drugs supplied to superintendents under section 9 (*d*)	..	.. ..	10,070 49
		Rs. c.	
(*e*) Amount of export duty collected under section 28	..	1,189,708 82	
Less rebates paid	.. ..	.. 166,613 0	
			1,023,095 82
(*f*) Annual contribution out of the moneys provided for by the State Council of an amount equal to 15 per cent. of the total expenses of the administration of the Ordinance as shown under expenditure		.. ..	126,229 91
			5,592,679 90

EXPENDITURE.			Rs. c.
(*b*) *Pro rata* share of the actual expenditure (including salaries of staff) of all hospitals scheduled under the Medical Wants Ordinance		.. ..	418,686 26
(*c*) Ditto of all dispensaries ditto	..	.. ..	18,283 90
Ditto Ankylostomiasis campaigns	..	.. ..	46,997 78
(*d*) Annual amount sufficient to liquidate the cost of construction of all hospital or dispensary buildings completed after the commencement of the Medical Wants Ordinance, which have been scheduled in terms of section 30 (*d*) together with interest at 4 per cent. per annum on any unliquidated amount in 25 equal annual instalments until the cost of construction is liquidated		..	—
(*e*) Annual expenditure on additions and improvements to existing buildings properly chargeable to a capital account upon hospitals and dispensaries primarily maintained in terms of section 30 (*e*)	..	.. ..	8,830 31
(*f*) Cost of drugs supplied to superintendents under section 9 (*d*)		..	10,070 49
(*g*) Miscellaneous expenses incidental to the administration of the Ordinance:—			
(1) Issue of free drugs to estates under section 9 (*e*) of the Ordinance		..	268,782 65
(2) Annual subscription for upkeep of telephone and other incidental expenses connected with the telephones attached to hospitals and dispensaries		..	380 0
(3) Full cost of salaries and allowances of Inspecting Medical Officers		..	68,163 27
(4) Salary of clerk, Civil Medical Stores, for pricing estate requisition for drugs		..	1,338 10
Surplus		..	4,751,147 14
			5,592,679 90

Inspecting Officers.—There was no change in the system of inspection nor in the number of officers. In all 459 estates were visited in 1936.

Estate Sanitation: General:—The sanitary conditions on the estates visited by the Inspecting Medical Officers were satisfactory.

Of the 151 estates inspected in the Central Province Inspectorate the general sanitary condition of 8 was reported to be bad; in the Province of Uva Inspectorate there were no estates with bad sanitary condition; in Colombo Inspectorate the sanitary condition of 1 out of 115 estates inspected was bad.

Line Maintenance.—The lines were maintained in fairly satisfactory condition; but the almost entire neglect of lime-washing has been a marked feature. The temporary and semi-permanent lines are being gradually demolished and the reoccupation of lines is increasing.

Line Surroundings.—The sanitary condition of line surroundings, notwithstanding the great reduction or total removal of scavenging labourers owing to depression, was generally satisfactory. The importance of removing shade from round the lines and keeping vegetable gardens and cattle sheds at a sufficient distance from the lines has not been sufficiently realized.

Line Construction.—There has been appreciable activity in the matter of line construction on estates which were unfavourably reported on during the years of depression.

Government requirements were met by 5,903 out of 10,428 rooms inspected in Colombo Inspectorate, by 22,549 out of 25,299 in the Central Inspectorate, and by 20,899 out of 34,454 in the Uva Inspectorate. 20,830 line rooms did

not reach the standard required. Some of these particularly on small privately owned estates were unfit for the housing of labour. A fair percentage of these are beyond repair and are being demolished. Central cattle sheds on estates in which all cattle can be housed, incinerators for groups of lines for adequate disposal of rubbish, and separate kitchens or chimneys over fire places (one chimney in the centre of a partition wall to serve two cooking places) to avoid blackened walls are some items of importance and may be introduced with great advantage.

Line Accommodation.—There was no overcrowding in the Western and Central Inspectorates, but in the Uva Inspectorate the lines of 21 out of 193 estates inspected were overcrowded.

Inspectorate.	Not overcrowded.			Slightly overcrowded.			Overcrowded.		
	1934.	1935.	1936.	1934.	1935.	1936.	1934.	1935.	1936.
Colombo	131	84	113	2	2	2	3	—	—
Central	135	87	149	2	3	2	12	—	—
Uva	142	186	167	5	2	5	5	22	21
Total	408	357	429	9	7	9	20	22	21

Latrines.—Although most estates have provided latrines for the use of their labourers, it is reported that they do not use the latrines. Besides educating the labourers on the advantages of using the latrines, estate schools should be provided with latrines so that the children may be trained while they are young. Most estates have pit latrines which are unpopular with the labourers, and if these can be replaced by bucket latrines some improvement in the extensive use of latrines may be expected.

The following table shows the latrine accommodation on the estates inspected in 1936:—

Inspectorate.	Provided a sufficient Number of Latrines.	Provided an insufficient Number of Latrines.	Provided no Latrines.
Colombo	91	23	1
Central	100	45	6
Uva	61	126	6
Total	252	194	13

Water Supply.—The Inspecting Medical Officer, Western Inspectorate, reports that improvement in the matter of protected water supplies has advanced more rapidly than other sanitary measures adopted on Ceylon estates. In the Uva Inspectorate the water supplies of 122 out of 193 estates inspected were fully protected and about one-third partially protected. In the Central Inspectorate only 10 sources out of 151 inspected remained altogether unprotected.

In 1936, 334 of the 459 estates visited had an entirely protected supply; in 1935, 219 of the 386 estates visited had protected supplies. The number of unprotected supplies formed about 8 per cent. of the total number of supplies inspected, and were usually on estates owned by private individuals.

Maternity and Child Welfare.—The infant mortality rate for the year among the Indian labourers was 172 per 1000 births registered, as compared with 198 in 1935 and 200 in 1934. The infant mortality rate for the whole Island was 166 in 1936, as compared with 263 in 1935 and 173 in 1934.

In 1936. 2,303 male infants and 2,033 female infants died on estates, a total of 4,336, as against a total of 5,094 in 1935. The chief causes of high infant mortality among children on estates are: (1) the ignorance of the mother regarding feeding and clothing; (2) the exposure of expectant mothers and infants to hardships during the shifting of gangs from estate to estate; (3) the exposure to severe cold in the higher hills of Ceylon of infants born on the hot plains of India: (4) the want of sufficient clothing for infants born in the hill country: (5) presence of ankylostomiasis in the mother.

The infant death rates of the different estate districts for the last five years are given below :—

	1932.	1933.	1934.	1935.	1936.
Kandy	223	202	227	204	191
Matale	175	153	200	270	145
Nuwara Eliya	233	213	236	202	204
Badulla	165	171	175	171	156
Ratnapura	126	134	165	157	132
Kegalla	128	112	116	251	103
Colombo	135	110	182	211	128
Kalutara	81	127	139	135	115
Galle	163	137	144	135	117
Matara	228	194	199	245	224
Kurunegala	164	182	182	740	184

The chief causes of death during the past three years are as follows :—

Causes.	Infant Deaths under One Year.			Percentage of Deaths to Total Infant Deaths on Estates.			Corresponding Percentage for the Island.		
	1934.	1935.	1936	1934.	1935.	1936	1934.	1935.	1936.
Convulsions	674	740	576	14·4	14·5	13·3	24·1	20·7	24·5
Tetanus	2	1	2	·04	·02	·05	·08	·08	·1
Diarrhoea	50	43	47	1·1	·8	1·1	1·6	1·4	1·2
Bronchitis	146	113	118	3·1	2·2	2·7	1·1	0·7	1·3
Pneumonia	294	218	254	6·3	4·3	5·9	3·0	1·9	2·9
Enteritis	23	16	15	·5	·3	·3	1·3	·7	1·4
Debility	2,620	2,840	2,430	56·1	55·8	56·0	20·5	16·7	21·3
Prematurity	609	744	664	13·1	14·6	15·3	7·0	5·7	7·3
Other causes	248	379	230	5·3	7·4	5·3	41·3	52·2	40·0

Debility and convulsions are the chief causes of death. The high rate of mortality is attributed to inadequate skilled ante-natal attendance at the confinement and after the birth. Comparatively few estates retain the services of trained midwives, this being to some extent due to the difficulty in securing the services of suitable women. The ideas and methods of the labourers themselves on the subject of maternity and child welfare are not calculated to increase the infant's chances of life, and the remedy appears to be in the training of suitable estate women as midwives as soon as estate funds permit of this being done.

As regards maternal welfare, 428 mothers died in 1936, as against 545 in 1935. Of this 428 deaths, 210 were due to puerperal septicaemia, principally caused by dirt and faulty midwifery. The maternal mortality on estates was 17.0 per 1,000 births registered, as compared with 21.2 in 1935, 17.9 in 1934, and 16.9 in 1933. The Island rate for 1936 was 21.6 and 21.1 during the quinquennium 1931-1935. The high rate is largely due in all probability to the stubborn conservatism of the Indian labourers which prevents their utilizing freely the medical benefits now provided on estates for lying-in women. The maternity wards on estates are not much used and it is only by the gradual education of the female labourers and through their personal experience of the advantages to be derived by treatment in estate maternity wards that any considerable improvement can be expected.

Estates are required by law to allow expectant mothers a rest during the last month of pregnancy and give other benefits in the form of food and cash, though the cash bonus has in many cases been perforce reduced recently.

Principal Causes of Deaths among Estate Labourers.—Figures showing the principal causes of deaths among Indian immigrant labourers are given in Section II., Vital Statistics. The chief causes of death were debility, pneumonia, ankylostomiasis, infantile convulsions, and diarrhoea.

Epidemic Diseases.—Malaria did not prevail in epidemic form in 1936. There was one case of death owing to plague.

5.—HOUSING AND TOWN PLANNING.

Before any building can be constructed or any alteration affected to an existing building in Sanitary Board and in Urban District Council areas and in certain other areas proclaimed under the Housing Ordinance, application for permission

has to be made to the local authority who refer it to the Medical Officer of Health for report and recommendation. Permission is given provided the building or alteration conforms to the requirements of the Housing Ordinance.

Buildings are systematically inspected and in the case of those that are found to be unfit for human habitation action is taken to improve them by taking closing orders under the Housing Ordinance.

The following is a statement of work done in connection with the enforcement of the requirements of the Housing Ordinance:—

A.—New and Reconstructed Buildings.

Number of applications received in respect of:—

	W. P.	C. P.	S P.	E. P.	N.-C. P.	N.-W. P.	N. P.	Uva.	Sab.	Total.
(1) Dwelling houses—										
(*a*) New ..	742	181	194	180	—	120	152	45	41	1,655
(*b*) Reconstruction and repairs ..	625	94	155	—	15	59	29	41	63	1,081
(2) Other buildings—										
(*a*) New ..	846	186	61	25	—	32	106	16	23	1,295
(*b*) Reconstruction and repairs ..	111	83	12	—	70	42	16	53	10	397

B.—Insanitary Buildings.

(1) No. of insanitary buildings reported upon the year	77	139	57	—	156	17	24	108	29	607
(2) No. of closing orders obtained ..	26	37	15	—	—	1	18	48	5	159
(3) No. of buildings improved	23	56	8	—	7	4	1	25	20	144
(4) No. of demolition orders obtained and extended ..	16	5	5	1	—	—	13	11	3	54
(5) No. of buildings demolished	60	46	22	—	7	5	5	15	5	165

6.—FOOD IN RELATION TO HEALTH AND DISEASE.

All food handling establishments in areas under local authorities are licensed annually after inspection and recommendation by the Medical Officers of Health. Licensing is also in force in certain areas under Village Committees.

Markets are provided by local authorities for the sale of meat, fish, vegetables, and fruits. They have been satisfactorily maintained.

All foodstuffs exposed for sale were regularly inspected and action taken where necessary under the provision of the general law dealing with food unfit for human consumption. The following statment shows the number of inspections made of these premises in the various provinces:—

Province.	No. of Inspections.
Western	73,426
Central	36,913
Southern	22,830
Northern	12,433
North-Western	21,258
North-Central	1,933
Eastern	12,848
Uva	333
Sabaragamuwa	9,432

With endemic plague in Colombo the proper storage of rice is a matter of great importance. The special regulations for controlling it are being enforced by various local authorities. Fair progress has been made in this direction during the year.

For the greater convenience of traders, the grain shop (storage for over 5 bags and under 50 bags) was done away with and the maximum storing in bins increased from 5 bags to 15 bags. The grain store has been retained for quantities over 15 bags.

Milk Supply.—A Milk and Dairies Ordinance has been drafted and awaits the approval of the Executive Committee of Health. The passing of this Ordinance

will provide more effective supervision over the production and sale of milk. Adulteration of milk with water is still a common occurrence. With the existing law it is not possible to control it satisfactorily. There is no control over the sale of milk in Village Committee and other rural areas, while there is a fair measure of control in all town areas.

It has been found that in places where frequent sampling of milk is done the quality of milk sold is often better. In areas where sampling is slack cases of adulteration are more and the quality of milk is poor.

The following is a statement of work done in connection with sampling of milk:—

	W. P.	C. P.	S. P.	N. P.	E. P.	N.-C. P.	N.-W. P.	Uva.	Sab.	Total
No. of samples taken and sent for analysis	96	125	10	—	19	—	42	20	37	349
No. of samples found adulterated	66	91	8	—	16	—	29	7	30	247
Percentage found adulterated	47	56	—	—	74	—	83	35	81	627
Percentage of water varied from, per cent.	7 to 50	10 to 47	26 to 43	—	10 to 40	—	8 to 61	14 to 45	8 to 61	11·9 to 49·6
Average adulteration, per cent.	28	28	34	—	25	—	34	29	34	30·3
No. of persons prosecuted	61	75	10	—	13	14	33	7	33	246
No. convicted	40	62	7	—	8	14	13	1	31	176
No. warned and discharged	7	3	2	—	3	—	3	—	—	18
Amount of fines realized, Rs.	629·30	989·50	80·00	—	165·00	49·00	163.50	25·00	277·50	2,378·80

Meat Inspection.—All cattle slaughtered are inspected before slaughter and kept in pounds for 24 hours. Slaughtering in areas under local authorities is carried out in slaughter-houses maintained by them. The work has been satisfactorily carried out.

The following statement shows the number of slaughter-houses in towns, cattle and goats examined and passed for slaughter:—

Number of Slaughter-houses in			Number Examined.		Number allowed to be Slaughtered.	
U. D. C.	S. B.	Rural areas.	Cattle.	Goats.	Cattle.	Goats.
32	57	88	42,229	26,249	37,521	25,348

The following is a statement of licensed stalls according to provinces and work done:—

Provinces.	Number of Licensed Stalls in			Inspections.	Defects.	Defects remedied.
	U. D. C.	S. B.	Rural areas.			
Western	103	50	73	21,310	2,565	2,156
Central	54	37	30	10,960	192	170
Southern	6	—	34	163	2	1
Northern	7	3	4	95	346	150
Eastern	14	10	24	871	359	455
North-Central	7	—	—	362	137	137
North-Western	23	31	31	2,311	157	95
Uva	38	14	—	7,123	38	37
Sabaragamuwa	12	48	24	2,662	1,441	1,021

7.—HEALTH UNITS.

In addition to the 8 existing health units activities of which were detailed in previous years' annual reports, work was carried on intensive lines in 3 additional units which were inaugurated in the last quarter of the year 1935. In all 11 health units were in operation in the Island in the year under review. Although in these new units at Hewagam korale, Salpiti korale, and Raigam

korale the chief activity carried out was a detailed health survey of the respective areas, other phases of health work such as control of communicable diseases environmental sanitation, maternity and child welfare and school health and hygeine also received attention.

Area.—The area worked in 1936 was 1,245 square miles. This includes 334 square miles comprising the 3 new units which came into existence towards the end of 1935.

Population.—The population of the whole area worked on health unit lines increased automatically with the addition of the new units and also with the lapse of time since the last report was submitted. From 505,851 in 1935 the population increased in 1936 to 820,166 which classified by place of residence was as follows:—221,745 urban, 591, 917 rural, and 6,504 estate, as compared to 126,145 urban, 369,646 rural, and 10,060 estates. A reduction in the estate population in the year 1936 in spite of added areas where estates abound may be due to the dimunition of immigrant labour population consequent on their replacement by indigenous village labour.

Personnel.—The personnel employed was as follows:—

	1934.	1935.	1936.
Medical Officer of Health	8	9	11
Medical Officers	2	2	2
Supervising Sanitary Inspectors ..	2	3	2
Sanitary Inspectors	57	55	82
Public Health Nurses	20	17	23
Midwives	72	78	114
Clerks	9	9	12
Peons	8	7	9
Orderlies and labourers	11	11	16
Others	—	3	5

Work.—Work in all these units was planned and carried out on the usual health unit lines emphasising attention to both community and individual hygiene. In the new units work was commenced with carrying out a detailed health survey of each area on the findings of which the final programme for routine health work as well as for dealing with special problems of the respective areas would be based. While the survey was being carried out activities such as hookworm treatment, health education, and maternity and child welfare work was also developed.

Births and Birth Rates.—The total number of births in the health unit areas taken together was 23,829 giving a rate of 29.1, as compared with 14,993 births and a rate of 29.6 for 1935, the Island rate for 1936 being 34.1

The table below gives the rates for the last four years by respective units:—

Units.	Years. 1933.	1934.	1935.	1936.
Kalutara totamune ..	37·8	30·0	32·2	32·6
Panadure totamune ..	31·1	25·3	25·5	27·9
Weudawili hatpattu ..	45·4	42·0	25·6	39·9
Matara Gravets and Wellaboda pattu	42·4	40·8	40·8	37·7
Paranakuru korale ..	41·2	40·9	34·2	28·3
Trincomalee District ..	39·8	40·0	36·0	35·6
Yatinuwara	36·9	36·5	31·5	28·7
Colombo Mudaliyar's division ..	29·1	20·1	21·3	22·6
Salpiti korale	—	—	—	27·0
Raigam korale	—	—	—	27·0
Hewagam korale	—	—	—	26·2

Deaths and Death Rate.—12,601 deaths occurred during 1936 giving a rate of 15.3, as compared with 17,339 deaths and a rate of 34.3 in 1935 and 21.8 for the Island in 1936. The high rate for 1935 was partly due to the heavy toll of deaths

levied by the malaria epidemic which began in 1934 and continued for some months in 1935. The death rates for the different units are as follows for the last four years :—

Units.	Years. 1933.	1934.	1935.	1936.
Kalutara totamune ..	20·9	23·4	19·4	16·8
Panadure totamune ..	16·7	17·4	17·0	13·9
Weudawili hatpattu ..	22·0	32·4	95·4	25·1
Matara Gravets and Wellaboda pattu	18·3	19·1	20·8	17·7
Paranakuru korale ..	16·9	19·2	78·4	15·1
Trincomalee District ..	26·0	21·5	36·0	37·7
Yatinuwara	14·1	18·7	40·2	12·1
Colombo Mudaliyar's division ..	16·6	13·2	13·3	11·4
Salpiti korale	—	—	—	16·6
Raigam korale	—	—	—	11·7
Hewagam korale	—	—	—	11·2

It would be noted that there was a decided drop in the death rates of almost all the units particularly noticeable in Paranakuru korale and in Weudawili hatpattu areas where in the previous year malaria had exacted a very heavy toll.

Infant Mortality.—There were 2,904 infant deaths with a mortality rate of 121.8, as compared with 3,900 deaths and a rate of 253.5 in 1935, the Island rate for 1936 being 166. In most of the units the rates had returned to pre-epidemic level and in some of them they are even lower. In Paranakuru korale and Weudawili hatpattu the two most adversely affected areas during the malaria epidemic the rates in 1936 reached very nearly the same level as in pre-epidemic years although they rose as high as 553 and 904 respectively during 1935. The rates for the past four years are—

Units.	Years. 1933.	1934.	1935.	1936.
Kalutara totamune ..	119	134	99·1	98·8
Panadure totamune ..	102	121	92·3	101·5
Weudawili hatpattu ..	173	245	904·2	186·0
Matara Gravets and Wellaboda pattu	107	102	121·4	109·0
Paranakuru korale ..	116	128	553·0	119·0
Trincomalee District ..	181	197	274·0	215·0
Yatinuwara	129	162	278·0	125·0
Colombo Mudaliyar's division ..	140	150	148·2	114·4
Salpiti korale	—	—	—	178·0
Raigam korale	—	—	—	84·0
Hewagam korale	—	—	—	87·0

Maternal Mortality.—Maternal deaths in 1936 in all these units taken together amounted to 288 with a rate of 12.0, as compared with 327 deaths and a rate of 18.8 in 1935, the rate for the Island being 21.6 in 1936.

Units.	Years. 1933.	1934.	1935.	1936.
Kalutara totamune ..	16·9	16·3	15·5	12·7
Weudawili hatpattu ..	30·0	28·0	87·6	27·0
Panadure totamune ..	12·9	15·6	17·5	11·0
Matara Gravets and Wellaboda pattu	12·3	5·6	18·0	9·3
Paranakuru korale ..	14·7	10·4	27·1	15·8
Trincomalee District ..	24·0	18·0	23·0	33·4
Yatinuwara	11·8	10·8	11·7	9·1
Colombo Mudaliyar's division ..	10·6	10·4	13·5	5·5
Salpiti korale	—	—	—	10·2
Raigam korale	—	—	—	9·8
Hewagam korale	—	—	—	4·4

Notably there had been a reduction in this rate in the respective units compared to that of 1935 but the rates for 1936 compare very favourably in almost all of the units with the rates in the pre-epidemic years 1932 and 1933. This can be attributed to the intensive ante-natal care given in all areas by holding separate ante-natal clinics, by regular hookworm treatment, and by providing trained midwifery service.

Stillbirths and Stillbirth Rate.—In urban areas only, these figures are available. Total stillbirths in the urban areas of these 11 units amounted to 171 giving a stillbirth rate of 42.1, as compared with 50.5 in 1935 and 44.1 in 1934.

Expenditure.—Government spent Rs. 370,285.48 on this work, while the local authorities contributed Rs. 349,669.06. The per capita cost for respective units worked out as follows:—

	Per Capita Cost.	
	On Government Expenditure.	Including Expenditure of Local Authorities.
	Rs. c.	Rs. c.
Kalutara totamune	0 67	1 11
Weudawili hatpattu	0 64	1 51
Matara Gravets and Wellaboda pattu ..	0 75	1 0
Paranakuru korale	0 45	0 61
Trincomalee District	0 82	1 59
Yatinuwara	0 75	0 86
Panadura totamune	0 40	0 88
Colombo Mudaliyar's division ..	0 29	1 36
Salpiti korale	0 23	0 68
Raigam korale	0 35	0 41
Hewagam korale	0 28	0 42

Health Education.—A tabulated statement of the work done under this head during last three years is given below:—

	1934.	1935.	1936.
Lectures—			
With lantern	84	100	240
Without lantern	103	62	164
With cinema	29	30	55
Talks—			
School	1,791	1,588	2,389
Village	3,219	3,100	4,806
Clinic	1,599	1,978	2,433
Health Weeks	3	3	5

It is estimated that a population of 418,547 or 51 per cent. of the total population of the health unit areas was reached, as compared with 51.5 per cent. in 1932, 53 per cent. in 1933, 58 per cent. in 1934, and 51.8 per cent. in 1935.

617 conferences were held with the staff and 1,155 with others.

Training in health habits was carried out in 397 schools, as compared with 187 in 1933, 369 in 1934, and 350 in 1935.

Health Survey.—A total of 410 premises were resurveyed in Kalutara totamune. Panadure totamune, and in Raigam korale. 54,914 premises were newly surveyed in connection with the detailed survey of these areas following the inauguration of the units, of which 54,311 were in the Salpiti korale, Raigam korale, and the Hewagam korale.

Communicable Diseases.—4,158 cases of communicable diseases were notified and investigated. This number is 2,070 more than in 1935. It does not necessarily indicate greater incidence of all communicable diseases and was partly due to better notification and reporting. Minor infectious diseases such as chickenpox, whooping cough, and measles occur in some years in large numbers than in others and the apparent increase of the number of cases of communicable diseases in 1936 was to some extent due to the increased incidence of these diseases.

Of the various communicable diseases chickenpox, dysentery, typhoid fever, pulmonary tuberculosis, and whooping cough lead with 1,540, 739, 688, 420, and 88 cases respectively.

8,394 first and 6,454 second doses of anti-typhoid inoculations were given in 1936, as against 2,410 and 1,807 respectively in 1935. Mass inoculation campaign was conducted in several units and a greater proportion of the second dose to the total was reached.

15,893 primary and 168 secondary vaccinations against smallpox were performed as compared with 9,755 primary and 29,336 secondary in 1935. The inordinate high figure for secondary vaccination in 1935 was due to work done in connection with outbreak of smallpox.

Mass hookworm treatment received intensive attention during the year and 53,567 persons were treated in 1936, as compared with 26,057 in 1935. More than double the number was treated this year. The malaria epidemic having subsided more people were available for hookworm treatment.

16,752 laboratory examinations were carried out, as compared with 23,375 in 1935, 19,749 in 1934, and 12,718 in 1933. Of this number, 3,074 were in Colombo and 13,678 at the local offices, as compared with 3,620 and 20,175 in 1935.

386 notifications of cases of tuberculosis were received in 1936, as against 155 in 1935, 174 in 1934, and 133 in 1933. On the whole better notification had been made of this disease this year as compared with previous years. Moreover the intensive attention paid to this problem in health unit areas combined with the increased follow-up work in connection with existing cases resulted in the detection of fresh cases and often in their early stages.

1,880 home visits were made, as against 633 in 1935. A total of 332 patients and 1 306 contacts were kept under observation, as compared with 201 patients and 463 contacts in 1935. The contacts received 1,411 examinations and 57 patients were placed in institutions.

Malaria which prevailed in the Island in 1934 and a part of 1935 in the form of a menacing epidemic subsided to a great extent with the dawn of the year 1936. Relapses were not uncommon in certain health unit areas which had suffered terribly during the epidemic. But a good deal of intensive work in connection with anti-malarial measures was done in all these areas. No less than 50,174 breeding places of anopheline larvae were surveyed and 9,294 places dealt with permanently and 7,041 places temporarily. Distribution of prophylactic quinine was continued and 181,796 3-grain tablets and 348,352 5-grain tablets were distributed in 1936 to 121,046 persons as a prophylactic measure. 1,131 3-grain tablets and 24,431 5-grain tablets were administered to 3,963 patients.

In the health unit area of Matara Gravets and Wellaboda pattu there was a slight recrudescence of malaria in certain villages in the Wellaboda patu but it was promptly controlled.

Anti-Plague Measures.—2,225 commercial premises were inspected for rat holes, as compared with 3,146 in 1935. 5,950 rat holes were found, of which 4,274 were dealt with. 366 premises were radically improved. In addition to the routine anti-rat measures the Urban District Councils and the Sanitary Boards were prevailed upon to make provision for storage of grain in large quantities, to enforce the plague regulations and also to make necessary arrangements for cyanide fumigation.

Anti-Fly Measures.—10,844 breeding places of flies were dealt with, as compared with 5,946 in 1935.

Hygiene, Maternity, Infant, and Pre-school.—The number of centres for maternity and child welfare work increased from 56 in 1935 to 63 in 1936. It was observed that by holding ante-natal clinics separately from the well-baby clinics there was a better response from the expectant mothers and increased attendance at the clinics. In all health unit areas this procedure was being gradually introduced. The number of clinics held at them was 3,713, as compared with 3,015 in 1935, 2,789 in 1934, and 1,855 in 1933. The table below shows the growth of the work at these centres within the last three years :—

	1934.	1935.	1936.
Number of expectant mothers under care	—	—	22,128
Number of expectant mothers attended	2,822	3,554	6,555
Number of visits by the above	5,386	6,909	13,935
Number of infants under care	—	—	8,881
Number of infants attended	2,357	3,393	3,967
Number of visits by the above	14,523	26,546	23,870
Number of pre-school children under care	—	—	11,985
Number of pre-school children attended	2,072	2,628	3,420
Number of visits by the above	11,983	19,818	14,610

117 trained midwives made 162,808 ante-natal home visits and conducted 12,018 deliveries, as against 101,999 such visits and 7,719 deliveries by 78 midwives in 1935. The midwives paid 83,082 postpartum visits, as against 55,582 in 1935. The percentage of births delivered by health unit midwives in 1936 was 50.4, as against 51 in 1935. It would be seen from the table below that but for the 3 new units where for want of personnel the large proportion of births could not be attended to by the health unit midwives, the percentage of deliveries by midwives to total births is higher in all the other 8 units as compared with 1935:—

Units.	1935.	1936.
Kalutara totamune	66·7 ..	72.0
Weudawili hatpattu	39·0 ..	55.5
Matara Gravets and Wellaboda pattu.. ..	57·9 ..	67.0
Paranakuru korale	32·5 ..	58.0
Trincomalee District	30·4 ..	48.0
Yatinuwara	50·5 ..	51.0
Panadure totamune	51·8 ..	60.2
Colombo Mudaliyar's division	61·8 ..	58.0
Salpiti korale	— ..	19.0
Raigam korale	— ..	31.3
Hewagam korale	— ..	33.3

School Hygiene.—14,147 were medically examined, as against 6,629 in 1935 and 7,183 in 1934. 9,837 or 69.5 per cent. were found to be defective with a total of 20,929 defects or 2.1 defects per defective child. 6,268 or 29.1 per cent. of the defects were corrected, as against 2,828 and 19.7 in 1935.

Consultation at Office.—There have been 1,665 consultations at the offices of the Medical Officers of Health, as against 4,234 in 1935. Of these, 939 were by children and 726 by adults.

Periodic Health Examination.—Seven of the 200 persons attached to these units received complete periodic physical examinations and advice during the year, as compared with 8 in 1935 and 7 in 1934.

Latrine Construction.—There are 152 public latrines in these areas and to maintain them in a sanitary condition 12,976 inspections were paid; 225 of these were found to be defective. Three pit latrines were newly built.

141,936 private premises are provided with 61,073 latrines.

6,226 latrines were newly built during the year, as compared with 3,334 in 1935 and 3,723 in 1934. During the year 460 latrines were restored to sanitary type, as against 219 in 1935 and 453 in 1934. There were 1,145 bored-hole latrines that were effectively used. 156 bored-hole latrines were constructed in 1936.

613 schools in the various areas are provided with 1,205 latrine seats or 2 latrine seats per school, as against 2.2 latrine seats per school in 1935. Seventy new seats were constructed during the year.

Water Supply.—Two public wells were constructed during the year. The 237 existing public wells received 4,299 inspections during the year and 18 were partially and 5 radically improved.

There were 68,102 inspections of private wells and 27,045 were found defective, of which 432 were improved partially and 213 radically. In the year under review 215 new wells were constructed, as compared with 148 in 1935.

530 springs and spouts used by the inhabitants as their source of water supply received 18,551 inspections.

Licensed Trades.—There were 279 bakeries, 7 aerated water manufactories, 213 dairies, 270 eating-houses, 254 laundries, 11 lodging houses, 91 fish stalls, 86 meat stalls, 198 vegetable stalls, 1,817 tea and coffee boutiques, 1 soap manufactory, 74 cattle galas, 160 lime and brick kilns in these areas. All these were inspected and while causing various improvements nuisances found were abated. 78,246 inspections were made.

Food Sanitation.—11,382 heads of cattle were examined and 10,661 allowed to be slaughtered, as against 7,538 and 6,984 respectively in 1935. Of the 7,496 goats examined, 7,213 were passed as fit for slaughter, as against 5,391 and 5,020 respectively in 1935.

182 samples of milk were examined, as against 171 in 1935. Of these, 101 were found adulterated.

On 13 occasions food unfit for human consumption was seized and dealt with.

Housing.—282,904 inspections of private premises were made, as against 199,988 in 1935, 230,644 in 1934, and 216,267 in 1933. The number of defects found at these inspections was 150,397, of which 96,109 were rectified, a percentage of 63, as against 53.7 in 1935.

There were 16,059 inspections of public premises in the area and 3,335 defects were detected, of which 2,590 were remedied obtaining a percentage of 77.6, as against 84.2 in 1935.

Sixty-six insanitary dwellings were reported on and 9 improved and 30 demolished.

613 schools in the areas received 5,455 inspections in the course of which 1,790 defects were found and 1,229 of them rectified.

1,889 applications to build were received during the year, while 1,252 of these were reported on. There were 911 applications for making additions and alterations to existing buildings and 673 were dealt with.

Estate Health Work.—Seventy-three estates, of which 61 employing resident labour, came under the purview of the intensive health activity areas. Of these estates, 54 were co-operative and received 100 inspections which resulted in the remedying of 11 defects out of the 35 noted.

Maternity and child welfare work in the estates continued to be carried out. 562 expectant mothers and 450 infants were kept under care, as against 117 and 55 respectively in 1935. 1,234 ante-natal visits were paid, as against 1,572 in the previous year. The midwives attached to the different areas were responsible for 137 deliveries among the estate expectant mothers, as against 118 in 1935.

In the Kalutara and Yatinuwara divisions the Public Health Nurses visited the estates.

Training of Health Personnel.—In addition to the Kalutara Totamune Health Unit which had so far been utilized as the only training centre for health personnel, the Panadure Totamune Health Unit which had been provided with increased staff and developed more fully, was also made a training centre during the year.

The training of Public Health Nurses however continued to be carried out exclusively at the Kalutara Health Unit. In all 13 Public Health Nurses were trained during the year under review, of which 6 completed the course in the first half of the year and 7 in the second. Four out of these 13 nurses were sent by the Public Health Department of Mysore, India.

Seven departmental Medical Officers and Medical Officers of Health spent varying periods of time at the Kalutara and Panadure totamunes, some studying general health unit work and some special phases of it. Four Medical Officers of Health from Mysore, Cochin, and Calcutta studied Health Unit work. Several distinguished visitors from the League of Nations, the Rockefeller Foundation, and the Government of Bengal also visited these units, looking into the Health Unit aspect of public health work.

Towards the end of the year Kalutara and Panadure units were utilized for giving the Field Medical Officers appointed under the Anti-Malaria Scheme, an intensive course of training in public health work for a month. Thirteen such officers were trained, 7 at Kalutara and 6 at Panadure. In addition to the above, these two units are also made use of for training midwives in field work and giving field demonstrations to medical students, sanitary learners, and to teachers of training schools and colleges.

8.—SANITARY ENGINEERING.

Malaria.—The severity of the epidemic of malaria waned in the early part of the year. Oiling of rivers was carried on by the Engineers of the Division during January and February and suspended thereafter as a result of the improved conditions. The oil consumption during the year on river work amounted to 18,902 gallons at a total cost of Rs. 12,468.75 for labour, transport, and oil.

Gauges were fixed in rivers at all the experimental malaria observation stations in order that low water levels may be recorded and correct forecasts made of pool formation in river beds so that timely action may be taken to prevent a considerable increase of the anopheline carrier.

On receipt of information that an increase in the breeding of *A. culicifacies* had been observed in certain sections of Deduru-oya catchment during August, oiling was again immediately organized and carried on for about a month until the onset of the rains. A similar emergency arose in the Maha-oya basin also around Mawanella but timely rains intervened and saved the situation in time.

The attention of the Division was concentrated during the year upon devising permanent measures for controlling anopheline breeding in river beds, based upon experimental work carried out at Badulla on the Badulla-oya and upon the study of river sections within the populous areas of the epidemic zone which are important from the malarial point of view. A length of 4 miles of the Maha-oya in the vicinity of Alawwa and a further stretch of 1½ miles of the Badulla-oya were surveyed with a view to carrying out further investigations on these lines.

The following experimental measures for effecting the reduction of pools in river beds were tried out on the Badulla-oya at Badulla:—

(1) Eradication of permanent rock pools by boulder and shingle packing of pools to water level and finally sealing same with cement grout or with cold asphalt emulsion.
(2) Eradication of pools by the removal of rock and boulder barriers by blasting and wedging.
(3) Construction at selected points of submersible wire mesh boulder filled groynes with the object of increasing the sand cover along the river edges and of retaining a sufficient sand cover on the scoured sections.
(4) Placing of concrete tetrahedron blocks at suitable places in order to encourage sand deposits at selected places.
(5) Bamboo stake fencing driven longitudinally to encourage the formation of a stable dry weather channel.
(6) Spur groynes of bamboo laid at various angles, spacings and heights in order to reduce bed velocities and thus encourage silting between the dry weather channel and the river banks.
(7) Reduction of bed velocities and the consequent encouragement of silt deposit by the erection of low bamboo and boulder check dams.

The above experiments have been very encouraging. Satisfactory silting took place on both sides of the dry weather channel but the channel itself in certain places was subject to scour due to the extremely sharp grade on the river bed. These defects were however corrected by the introduction of low check dams at selected points.

The results of these experiments have shown that pools and shallows in river beds which formed the main breeding places of the anopheline mosquito during the recent epidemic can be enormously reduced and in certain situations entirely eradicated by the adoption of suitable engineering devices.

The possibility of preventing the breaking up of the dry weather channel causing pool formation in sand bottomed rivers has been demonstrated and the inexpensive methods of construction employed for reducing scour have given highly satisfactory results.

The investigations have indicated the extreme necessity for dealing with temporary obstructions in water courses known to harbour malaria carriers in order that natural conditions of flow in the rivers may be obtained.

A separate report on anopheline control in river beds based upon these experiments was submitted and it is proposed to extend the experimental measures at Badulla during the year 1937.

A programme of river improvement works spread over 4 years has been drawn up and submitted to the Hon. the Minister. This will cover many of the river sections in the epidemic zone. Further experimental control work will be started in river sections around Alawwa, Mawanella, Katugastota, and Teldeniya

during 1937. These are being undertaken with a view to arrive at definite conclusions as to the adaptability of certain experiments carried out on the Badulla-oya to other river sections. With the increase of staff proposed it will then be possible to carry out the full programme outlined during the following three years.

Drainage.—During the year under review several permanent anti-malarial works were constructed by this Division at the respective malaria campaign centres.

Improvements to the Watakalai Odai at Chilaw was completed at a cost of Rs. 5,377.54. This work comprised the construction of a masonry channel from Puttalam road bridge to railway bridge realigning and cutting same to improved width and grade. Surveys were carried out and drainage schemes drawn up for the improvements of Timilla-ela and the channel from Kurunegala road to the lagoon at Chilaw. These improvements when carried out will enable several acres of swampy land to be reclaimed.

At Puttalam improvements to the Nedunkulam channel were completed and recommendations were made regarding draining the new settlement area.

Improvements to Divulgahakotuwa-ela and Nuwarawewa spill channels at Anuradhapura were completed at a cost of Rs. 7,556.64 and Rs. 3,227.71 respectively. An aggregate length of two miles of channels were realigned, widened and graded effecting the reclamation of several acres of swamps and ponds. Work on the drainage of the Malwatu-oya Lane Pond after having been held up for two years by the refusal of landowners to the acquisition of land was finally completed during the year. A temporary supervisor of works was appointed for a few months to supervise these works.

Surveys were completed and a scheme has been drawn up for improvements to the Ottupalam channel from Dickson road to Yard road. Reclamation of several acres of swamp land situated to the north of Dutugemunu Salawa were carried out by the construction of a culvert under the Y road and the irrigation channel, draining these swamps to the Divulgahakotuwa-ela. Minor improvements to Halpan-ela was also effected from funds provided for by the Urban District Council. The drainage of extensive swamps and borrow pits situated on both sides of the railway approach road and the railway line were completed. The lowlying area near the railway station was filled to the desired level with engine ashes.

Tenders were invited for constructing a new fish nursery but owing to the high rates tendered it was decided to carry out the work departmentally.

Surveys were carried out and drainage schemes have been prepared for the improvement of the outlet channel from the drinking pond to Halpan-ela also for the drainage of two extensive swamps on the outer circular road. These when improved will result in the reclamation of several acres of swamps with a considerable reduction in the cost of temporary oiling measures.

At Trincomalee improvements were carried out to the channel at the Uppuveli area and an outfall culvert to the sea was constructed through the sand bank at a cost of Rs. 3,494.

During the year anti-malarial drainage measures were carried out on the Crown land between the railway line and the sea at China Bay. This area comprises of approximately about 122½ acres of lowlying shrub jungle and man-grove swamps. It borders the lands reserved for the Military and the Naval authorities. The improvements carried out consist of realignment and cutting of seven channels of an aggregate length of 1¼ miles and the reclamation of about 15 acres of swamps which were a dangerous source of breeding of *A. culicifacies*. Provision has been made for carrying out permanent channel improvements in this area during the current year.

At Minneriya improvements to the waste water channel and the clearing of the Minneriya-oya have been recommended as a very desirable control measure and a section of this work is to be undertaken.

At Kurunegala improvements to the drain crossing the Puttalam road at culvert No. 2/4 have been put in hand and will be completed shortly. This work is being carried out on funds provided by the Urban District Council.

Water Supplies.—There was a considerable increase in the work of the Division in connection with water supplies.

Soil surveys were made and borings were carried out by the division to ascertain suitable well sites in connection with new proposals for water supplies to the Aranayake hospital, the Government quarters at Vavuniya, Kataragama temple, Agricultural Station, Wariayapola, Leper Asylum, Hendala.

At Aranayake and Vavuniya suitable sites for wells were selected and it is anticipated that the yield from them will be satisfactory and adequate for the entire requirements of those institutions.

A complete scheme and estimate were drawn up for water supply to Kataragama to be put in operation during the annual festival. The scheme comprises the pumping of water from a well sunk in the bed of the Menik-ganga to two storage tanks of 1,600 gallons capacity each, one located on the river bank and the other near the main temple. Stand posts for the delivery of the water to the public are provided for at various points.

The soil survey carried out at the Wariyapola Agricultural Station indicated rock formation underlying a stratum of stiff non-water bearing clay on the elevated parts of the station. The possibility of obtaining an adequate supply of water for the entire needs of the station from this area was considered doubtful. Samples of water from the existing well in the reclaimed marshy area were chemically and bacteriologically examined and the results showed an improvement upon the previous examination of samples from this source and it was considered that further improvements in the quality of the water may be expected after the recommendations made for the conservation of the water have been carried out.

Investigations for replacing the existing Municipal water supply to the Leper Asylum, Hendala, were carried out during the year. From a study of the soil survey in this area it was considered very doubtful whether sufficient water could be obtained from the proposed wells, but a scheme for augmenting the existing Municipal supply could be obtained and would enable a saving to be effected in the cost of water now obtained from the Municipality.

The Division undertook the supervision of the construction of a new impounding reservoir at Nawalapitiya for the Urban District Council. The reservoir which was designed by the Division has now been completed and has a capacity of 4.8 million gallons, and comprised the formation of an earthen dam 29 feet high and 105 feet in length across the Wanakotu-ela. This reservoir will overcome the shortage of water experienced by the town and railway for very many years.

The chlorinator installations at Diyatalawa and Ragama were adjusted and the operators instructed on dosage control. The unserviceable gas feed chlorinator on the Haputale water supply was replaced by a solution feed instrument. The original schemes for water supply to Hanguranketa and Ampitiya were revised, in order that the initial works may be put in hand. The proposals of the Public Works Department for the purification works for the Chilaw water supply were commented upon. Inspections were made and reports submitted upon the sanitary aspect of the following water supplies:—Jaffna, Horana, Negombo, Anuradhapura, Talawakele, Lindula, Tillicoultry, Nanu-oya, Namunukula, Trincomalee, Galoya, Kahawatta, Matale, Rattota, Kandana hospital, Medagama hospital, Matale hospital, Wellawaya hospital, Kandy hospital, Angoda Lunatic Asylum, Negombo hospital, Marawila hospital, Ramboda hospital, Ratnapura Infectious Diseases Hospital, proposed training school for youthful offenders at Watupitiwela, Kegalla Residency, Minuwangoda, Matara Residency, and Gampaha and Ratmalana Aerodrome. Soil surveys were recommended and estimates framed in connection with the following water supply proposals:—Gomarankadawela dispensary, Verawil dispensary, Nikaweratiya hospital, Kalutara new hospital site, and Elpitiya hospital.

Designs and proposals were drawn up for purification works on the following water supplies:—

Mulhalkele hospital, Kurunegala railway supply, Kandy hospital supply from Hantane, Matara Assistant Government Agent's supply, Kahawatta supply, Dambulla hospital supply, Kiriella supply, Kandana hospital supply. The filtration and chlorination plants for the Railway Workshops, Ratmalana, was supervised by this Division during construction. The filters on the Ragama hospital supply and Dikoya hospital supply were overhauled under the supervision of this Division. Proposals put forward by the Public Works Department for water supplies to Dambulla hospital and Mantivu Leper Asylum were reported upon.

Physical examination of waters was carried out in the laboratory of the Division in order that suitable purification works may be designed for the following water supplies:—Diyatalawa, Kandana hospital, Matara (for corrosion), Marawila, Madulsima, Hendala, Vavuniya, Rattota, Jaffna. Comments were made upon chemical and bacteriological analyses of several waters.

During the year plans were prepared and proposals submitted for schemes of surface drainage for Gampola Urban District Council area, Kalutara, Katukurunda area and the Peliyagoda Sanitary Board. The original proposals for Maskeliya drainage were revised. Preliminary inspections were made and estimates submitted for field work and drainage proposals for the under-mentioned Urban District Councils—(1) Mannar, (2) Mount Lavinia, (3) Kotte. A scheme for the Badulla Urban District Council has also been considered. The activated sludge plant at Ratmalana originally designed by this Division was inspected from time to time, the effluent and sludge proportions were examined and recommendations made regarding operation of the works. Proposals for a sewerage scheme for Tataparai Quarantine Camp and Ragama Anti-Tuberculosis Hospital were revised. Proposals made by the Public Works Department for installing water-borne drainage for the new Nurses' Home and Bacteriological Institute at Colombo were reported upon. Bore-holes for sealed pits for sanitary drainage of the Balangoda hospital were put down by the Division. Reports were submitted after inspection on the drainage of Negombo hospital and the septic tank installations in Tangalla and Balapitiya hospitals. A large number of applications from residents of Nuwara Eliya for installation of septic tanks and filters was referred to this Division for scrutiny and a set of standard type designs for installations for small communities was drawn up.

During the year numerous type plans have been revised for latrines, for madams, for fairs and festivals, pit and water carriage latrines for estates, latrines for dispensaries, urinals for schools, for petrol sheds, septic tanks, grain bins and stores, dust bins, health units and child welfare centres, peasant dwelling houses, cattle sheds, &c.

The question of pollution of water-courses by distillery wastes and wastes from rubber factories has been engaging the attention of the Division for some time. Measures to safeguard the Kahawatta-ganga and Gin-oya against pollution were outlined in a report. The evolution of satisfactory and economical treatment plant for distillery wastes is receiving attention, and it is hoped to instal an experimental plant in Kalutara during 1937.

Sites for new hospitals for Panadure, Kalutara, and Rasagalla estate were inspected and reported upon.

The Division prepared plans and specifications and supervised the construction of new steel boutiques at Hatton as an anti-plague measure when plague broke out there.

Over 750 sheets of drawings were prepared in the drawing office during the year and arrangements were made for the printing by the Division of plans by the ozalid process. Repairs to anti-malaria campaign tools, latrine borers, &c., the preparation of larvae boxes, moulds, &c., were all carried out in our own workshops. All stores for anti-malaria campaign centres were handled by the Division, but owing to the enormous increase of work in other spheres, the Departmental Committee agreed that this work should in future be carried on by the Superintendent, Anti-Malaria Campaign.

B.—MEASURES TAKEN TO SPREAD THE KNOWLEDGE OF HYGIENE AND SANITATION.

Health education is carried out by Medical Officers of Health, School Medical Officers, Sanitary Assistants, Public Health Nurses, and midwives. The necessary material is provided from the Head Office.

Health Education in Schools.—Particular attention is paid to health education in schools. Realizing that only teachers are best able to impart such instructions to their charges the education by the teacher in health matters is being undertaken by the Medical Officers of Health and School Medical Officers.

A new syllabus for health education in teacher training schools was formulated and approved by the Director of Education. Their course which was commenced in September consists of thirty lectures of one hour's duration each and thirty exercises of two hours' duration each carried out during one year. Besides this a course in home nursing and mothercraft, as a portion of the housecraft course is given in training schools for female teachers.

Teachers already in service are given a modified course in health education at different centres in various parts of the Island. Such a course was commenced at Ratnapura and two other courses which were being held at Tangalla and Jaffna were concluded.

A joint certificate by the Education and Medical Departments is issued to those teachers who pass the examination and also carry out satisfactorily for six months the practical application in their classes of the principles of health learnt by them.

Fifty-two teachers have been awarded this certificate.

The course in health education in connection with the Rural School Training Centre of the Education Department at Mirigama was carried out during the year by the Medical Officer of Health of Negombo, with the assistance of a Sanitary Inspector, a hookworm dispenser, and an Entomological Assistant.

The teaching of home nursing and mothercraft as part of the housecraft course was undertaken by Public Health and School Nurses in schools.

Health education carried out in elementary schools is divided into: (*a*) Health Education procedures, (*b*) health instructions.

The former includes: Daily morning inspection, use of health habit training booklet, weighing and measuring, use of handkerchief and mid-day meal, and the latter: Health Education time-table, health diary, pupil participation, direct teaching, teaching by correlation, dramatization, first-aid, instruction in mothercraft and home nursing in girl schools and organized and supervised play.

Several schools are making attempts to carry out complete programmes of work.

To encourage health education in elementary schools a challenge shield has been provided by the Society of Medical Officers of Health. The Kalawita Government School won the shield for 1934-35 when it was awarded for the first time, and the winner for 1935-36 is Ihalagoda Boys' School.

Health education among the members of the general public is carried out by means of lantern and cinema shows and lectures, health exhibitions, and the distribution of literature.

Lectures.—A total number of 1,027 lectures were delivered during the year. Of these, 384 were with the magic lantern, 543 without lantern, and 100 with the cinema.

Leaflets and Pamphlets.—The demand for the leaflets on malaria, infantile convulsions, and the care of the expectant mother, which were printed during the previous year was so great that several thousand copies of each had to be reprinted for free distribution.

Health Exhibitions and Baby Competitions.—During the year under review fifteen health exhibitions were held at Makandura, Polgahawela, Sangitipelama, Gampaha, Jaffna, Weligama, Minneriya, Piliyandala, Bambaragamuwa, Veyangoda, Kalutara, Paiyagala, and Alutgama. Several thousands were attracted to these shows.

Health Leagues.—These are voluntary organizations formed by the villagers themselves and are of great assistance in the carrying out of health work in their respective areas. There were 28 leagues functioning during the year.

Besides community activities of this type Sanitary Inspectors during the course of their usual routine work give individual and special instructions on health matters. They also undertake school talks and village talks, the latter of which is invariably followed by discussions that tend to stimulate interest.

During their home visits and at clinics, Public Health Nurses endeavour to educate mothers and " Little Mothers " by talks as well as by demonstrations.

The publication of The Ceylon Health News, which was issued every two months, was suspended during the year, but arrangements are being made to resuscitate its publication in 1937.

Education of Professional Worker.—The Medical Officers of Health held 4 special conferences and 4 meetings of their society during the months of March, June, September, and December. One issue of the " Transactions " of the society was published during the year.

In all health units and in some of the areas of the District Medical Officers of Health, conferences of the sanitary officers of the respective areas are being regularly held. At health units these conferences are held weekly on Saturdays. During each conference the work of the week is reviewed, difficulties are discussed and the work for the next period is planned. A feature of these conferences is the reading of a paper on some particular phase of their work by one of the Sanitary Inspectors and this forms the basis for the day's discussion.

The Sanitary Inspectors have an association of their own and their annual conference was held on October 31 and November 1 at St. Thomas' College, Mount Lavinia. Their annual journal, " The Ceylon Sanitary Inspector ", which contains a record of the proceedings of the previous year's conference was issued during the year.

The Public Health Nurses held their annual conference on Saturday, August 22, 1936, at Negombo. This conference was opened by Lady Tyrrell. Their annual journal, " The Public Health Nurse ", contains a record of the proceedings of the previous conference.

It is proposed to hold a conference of midwives next year and to publish the proceedings in Sinhalese in the form of a journal.

C.—TRAINING OF SANITARY PERSONNEL.

Training of Sanitary Inspectors who are now called Sanitary Assistants is conducted as described in last year's report and they qualify for the certificate of the Royal Sanitary Institute.

During the year a class was conducted for 40 Sanitary Assistants from June to December, 1936. Thirty-five sat for the Royal Sanitary Institute examination for Sanitary Inspectors and 33 passed.

Certificates of Royal Sanitary Institute were given to 33 who passed in December, 1935.

The training of Public Health Nurses is carried out at the Kalutara Totamune Health Unit. The course of training was as stated in last year's reports. During the year 13 Public Health Nurses were trained.

The better training of midwives has received attention and the suggestion made in last year's report of increasing the training period to eighteen months and confining selection to the better educated women has been approved by the Executive Committee of Health and will be put into operation from 1937. The period of training at the Lying-in Home has been increased to one year to be followed by six months of field work in a health unit. The teaching at the Lying-in Home will include elementary hygiene and sanitation and ante-natal work. The examination will be held at the end of this period but the certificate will not be granted till a satisfactory six months' period in a health unit has been completed. Those selected for the training will be women who have obtained at least the Junior School Certificate. In the case of nurses the period is one

year, the six months' field work in a health unit not being required. During the year 158 women were admitted for training and 133 obtained their certificates on the old basis.

Post-graduate training in general health work, maternity and childwelfare work, and school health work is given at the Kalutara and Panadure Totamunes Health Units. All those who go in for training are provided with a set programme which is followed and the work done is written up. During the year 13 Field Medical Officers were trained.

D.—RECOMMENDATIONS FOR FUTURE WORK.

The policy of future health work in Ceylon is to expand it rapidly throughout the Island on intensive lines with a Field Medical Officer in charge of a restricted area having a population between 30,000 and 40,000. He will be provided with an adequate staff of Sanitary Assistants and midwives to start with, and Public Health Nurses later as they become available.

For the sparsely populated areas in which the economic condition of the people is low, work on rural uplift lines is being planned.

In this rapid expansion of work the training of personnel is most vital. While the Sanitary Assistants, midwives, and nurses will be adequately trained the Field Medical Officer will lack such training. The diploma in Public Health should be a *sine qua non* for this work. Although he is provided with an inclusive practical course consisting of two weeks of lectures and four weeks of work in either the Kalutara or Panadure Totamune Health Units in order to commence the work, facilities for obtaining the D.P.H. should be provided him.

Provision of adequate minor personnel should keep pace with the provision of doctors for health work, who by themselves will be handicapped and discouraged if a sufficient number of Sanitary Assistants, midwives, and nurses are not appointed.

The maternity and child welfare work of Urban District Councils needs the assistance of Government in the provision of the services of trained departmental Public Health Nurses on lines similar to those under which departmental Sanitary Inspectors are secured for service under them.

Dealing with the problem of plague in Colombo is a very much bigger matter than dealing with it in small towns. Much is being done now; but unless more radical measures are adopted which will entail much expense and perhaps a good deal of inconvenience to some, the disease will stay with us and be a menace to the interior of the Island and a drawback to the port. The extreme congestion of buildings in the Pettah, where plague is endemic, can only be dealt with by rebuilding certain areas. This needs the establishment of an Improvement Trust.

The control of soil pollution needs to be pushed on with greater vigour than at present.

The provision of more protected water supplies both in urban and rural areas should receive more attention.

The control of malaria needs trained personnel in the same manner as general public health work requires trained personnel. The Health Unit at Kalutara has been used as the training centre for the personnel engaged in general public health work, and this has created greater interest, and changed the general outlook, in public health and in procedures adopted to carry out the activities. A similar training-base in the field for malaria control work is needed where malaria will be dealt with as an essential part of general health work.

IV.—PORT HEALTH WORK AND ADMINISTRATION.

Ceylon is guarded against the introduction of dangerous infectious disease from abroad by the health service at each of its ports and by the two Quarantine Camps at Mandapam and Tataparai in Southern India. The chief sources of danger to the Island are (*a*) the grain traffic from Rangoon and other Burmese ports, in respect of plague—some 6,000,000 bags of rice are imported annually, of which

more than 4,500,000 come from Rangoon—and (*b*) the passenger and immigrant labour traffic between Southern India and Ceylon by the Dhanuskodi-Talaimannar and the Tuticorin-Colombo routes, in respect of cholera and smallpox. Prior to 1931 more than 200,000 persons a year usually entered Ceylon by these two routes which are protected by the Quarantine Camps of Mandapam and Tataparai respectively. The number fell for some years after 1931 but in 1934 rose to 245,483 and in 1936 it fell again to 137,961.

The technical work of the Quarantine Department is performed by Medical Officers, Apothecaries, Sanitary Inspectors, and Vaccinators of the Department of Medical and Sanitary Services. The port of Colombo has a whole-time staff of five Medical Officers, while at the 15 minor ports the local Medical Officers give part of their time to the work. The surveillance of travellers after arrival at their destinations in Ceylon is also carried out by Medical Officers of the department.

Colombo.—2,615 British and foreign vessels and 147 Indian sailing craft called at the port, as against 2,682 and 149 respectively in 1935. Of these, 54 vessels arrived in Colombo with cases of infectious diseases on board, viz., 17 with chickenpox, 28 with measles, 3 with dysentery, 3 with whooping cough, 1 with diphtheria, 1 with diarrhoea, and 1 with typhoid. It was generally possible to isolate the persons affected on board the vessels. Eight cases, however, were landed and sent to the Infectious Diseases Hospital, Colombo.

6,952 passengers were vaccinated during 1936 at three centres, viz., Port Health Office, Office of the Assistant Port Health Officer for immigration, and the disinfecting station.

Twelve pilgrims for Mecca were inoculated—10 against cholera and 2 against plague.

41,862 passengers going to Tuticorin were medically examined, 216 of these were found to be unfit and were detained.

During 1936, 39 cases of human plague were recorded in Colombo, as against 60 in previous year. Since rat plague is enzootic in certain parts of Colombo careful measures are taken in accordance with Article 13 of the International Sanitary Convention, 1926, to prevent infection reaching shipping in the harbour.

The precautions now taken have been extended during the year by the introduction of regulations making compulsory the fumigation of cargoes from plague-infected ports. This is a most important measure in anti-plague work.

It is hoped it will be possible to extend these measures to other parts in Ceylon which receive fairly heavy shipments, *e.g.*, Galle and Northern ports, to effectively block the entrance of fresh plague infection into Ceylon.

A venereal diseases clinic for seamen has been maintained at the port since 1921, and an account of its work appears in Section VI. of this report.

Minor Ports.—550 steamers and 2,360 sailing vessels called at the fifteen minor ports. 366 of the steamer visits were at Talaimannar in connection with the ferry service to India. All passengers arriving at Talaimannar had passed through Mandapam Quarantine Camp or had been inspected by Medical Officers of the Camp. No passengers are permitted to land at the other small ports in the northern part of the Island and ships discharging cargo at these ports must be licensed. This is a necessary precaution since the shipping is mostly engaged in coastwise traffic with small ports in districts of Southern India where smallpox and cholera are more or less endemic, while a few boats bring rice from Burmese ports.

Mandapam Quarantine Camp.—Owing to the continued lack of demand for labour during 1935 and 1936, there was a large decrease in the number of persons who passed through the Camp *en route* for Ceylon.

The following are the figures for the last seven years :—

Year.	Estate Labourers.	Passengers.	Total.
1930	91,422	62,162	153,584
1931	68,337	50,474	118,811
1932	50,869	45,972	96,841
1933	32,898	42,468	75,366
1934	140,607	48,530	189,137
1935	43,018	47,018	90,036
1936	40,803	46,052	86,855

All estate labourers remain five days in the camp, where they are disinfected, vaccinated, treated for ankylostomiasis, and subjected to a careful medical inspection. First class and many second class passengers and their personal servants are medically inspected at the railway station before being allowed to proceed, are vaccinated if necessary, and are subjected to surveillance for 12 days after arrival in Ceylon. The majority of third class passengers pass through the camp.

Seventy-two passengers and 35 estate labourers were rejected on acount of leprosy and 5 estate labourers were rejected for other diseases, viz., 1 smallpox and 1 cholera convalescence, 1 tuberculosis, 1 epilepsy, and 1 insanity.

The general hospital of the camp has accommodation for 20 patients. There were 506 admissions, of which 14 proved fatal.

The Infectious Diseases Hospital in the camp has 12 beds for smallpox and 16 for cholera. There were 2 cases of smallpox and 1 case of cholera, all of whom recovered. There were 17 cases of other infectious diseases, viz., chickenpox 6, measles 6, and mumps 5, all of whom also recovered.

3,784 persons who paid 8,248 visits were treated at the outdoor dispensary of the camp.

Treatment for ankylostomiasis was given to 34,148 labourers out of 40,913 examined.

34,753 passengers and 39,607 estate labourers were vaccinated against smallpox.

There is a school in the camp for children of employees and there were 203 day pupils and 32 night pupils on the roll at the end of 1936. A grant of Rs. 1,267.38 was received for the schools from the Madras Government.

The sanitary condition of the camp was very good throughout the year. The camp has its own water supply which is carefully protected and subjected to frequent laboratory examinations, its own electric lighting plant, and a water carriage system of drainage and sewage disposal. The food supply of kitchens were carefully supervised and continued to be satisfactory.

The work in the camp laboratory consists of the examination of pathological and bacteriological specimens from the dispensary and hospital.

The following table gives the number of specimens examined and the results:—

Examination.	Negative.	Positive.	Total.
M. leprae	387	41	428
M. tuberculosis	3	4	7
Malarial parasites	83	20	103
Vibrios cholera agglutinable	—	3	
Vibrios cholera-like inagglutinable	—	76	5,034
Vibrios atypical	—	22	
Other examinations	—	—	550
		Total	6,122

An investigation was started in 1931 to discover the number of persons travelling to Ceylon who were harbouring cholera vibrios; this work was discontinued in 1934 as it was considered that sufficient information had been obtained. Recent work has thrown new light on the antigenic structure of v. cholerae and other vibrios; and as an outcome of correspondence with Col. Taylor, the investigation was reopened in last July, and the vibrios which have been isolated have been forwarded to the Research Institute, Kasauli, for antigenic determination. This research will be of value.

Tataparai Quarantine Camp.—51,106 passengers proceeding from India *viâ* Tuticorin to Colombo passed through the Camp, as against 57,411 in 1935 and 56,346 in 1934. Of these, 39,237 were passed after full quarantine and 11,869 went under surveillance in Ceylon. Most of the passengers were petty traders, bungalow and garden labourers, and rickshaw pullers.

There were 186 rejections—164 for leprosy, 14 for recent smallpox and chickenpox, 2 for syphilis, 2 for unsoundness of mind, and 4 for other diseases.

There was 1 case of cholera and 1 case of smallpox in the camp—both cases recovered. Besides, there were 2 cases of cholera outside the camp which were treated at the camp in the interests of the camp residents—one died and the other recovered. There were 17 cases of other infectious diseases in the camp, viz., 4 cases of chickenpox and 13 cases of measles.

52,820 passengers were vaccinated, 41,463 at the camp and 11,357 at Tuticorin.

2,128 persons who paid 3,814 visits were treated at the camp dispensary.

The camp has an area of 39.68 acres. During the year 2 resthouses, 1 circuit bungalow, 2 wards for contacts, and 3 quarters for staff were completed.

A new pumping plant was purchased for raising water from the main bore-hole in the camp; an attempt is being made to obtain potable water in the camp premises by lining one of the bore-holes.

There is a school in the camp for children of the resident staff and there were 48 day scholars. The night school has not been a success. The Madras Government paid a grant of Rs. 287.06 to the day school.

Food of good quality and in sufficient quantity was served throughout the year. The catering was done departmentally.

The camp was maintained in a sanitary condition and the health of its personnel was satisfactory.

Surveillance.—99.97 per cent. of the 45,731 persons, or 45,719 persons from Southern India entering Ceylon under surveillance reported at their destinations and completed the 12 days' period of surveillance. Among these persons 3 cases of smallpox, 5 cases of chickenpox, and 3 cases of measles were detected during their period of surveillance.

V.—MATERNITY AND CHILD WELFARE.

Infant Mortality.—The following statement gives in tabular form the figures relating to infant deaths and infant mortality rates for 1936, 1935, and the average for 10 years 1926 to 1935:—

Infant Deaths.	Average. 1926–1935.	1935.	1936.
Whole Island ..	36,274	50,733	31,789
Urban areas ..	4,560	5,473	4,614
Rural areas ..	31,714	45,260	27,175
Infant Mortality Rates.			
Whole Island ..	178	263	166
Urban areas ..	193	210	161
Rural areas ..	176	272	167
Ceylonese ..	174	268	165
Indian immigrant	200	198	172
European ..	27	30	32

Of the 31,789 infant deaths convulsions have been responsible for 11,323 or 35.6 per cent. and debility for 6,787 or 21.3 per cent. As in previous years these conditions have been the two chief causes of deaths among infants.

Maternal Mortality.—The following table sets out the number of maternal deaths and maternal death rates for 1936, 1935, and the average for 10 years 1926 to 1935.

Maternal Deaths.	Average. 1926–1935.	1935.	1936.
Whole Island ..	4,121	5,165	4,158
Urban areas ..	749	971	917
Rural areas ..	3,372	4,194	3,241
Maternal Mortality Rates.			
Whole Island ..	19·4	21·1	21·6
Urban areas ..	30·9	37·2	32·0
Rural areas ..	18·4	25·1	19·9

The number of maternal deaths recorded for 1936 shows a decrease of 1,007 deaths of mothers at child birth as compared with the deaths for 1935.

The maternal mortality rate for the year is 21.6, which shows an increase of 0.5 per 1,000 over the rate for 1935. Although the Island rate for maternal mortality shows no improvement on that for 1935, the maternal mortality rates in areas where intensive work on health unit lines is being done, show a decided reduction. This indicates very strongly that until the greater portion of the

Island is worked by organizations through which intensive maternity welfare work can be carried on, very little effect will be made on the Island rates by any improvement in a few isolated localities.

Puerperal sepsis and puerperal convulsions contribute 80.7 per cent. of the total deaths at child birth, as compared with 80.2 in 1935. Of the 4,158 deaths, 1,927 or 36.7 per cent. have been caused by puerperal sepsis and 1,829 or 44.0 per cent. and 48.3 per cent. respectively in 1935.

Stillbirths.—Stillbirths are registered only in urban areas. During 1936 there were 2,221 stillbirths, as compared with 2,164 in 1935 and 2,177 in 1934 and 1,812 the average for the years 1926 to 1935.

The stillbirth rate for 1936 is 77 per 1,000 live births, as compared with 83.0 in 1935, 85.0 in 1934, and 76.8 average for ten years 1926-1935.

Ante-natal, Post-natal, and Baby Clinics.—At the ante-natal clinics held at the De Soysa Lying-in Home 6,739 mothers paid 9,902 visits, as against 5,396 mothers and 7,601 visits in 1935. At the post-natal clinics 374 mothers paid 477 visits.

In addition to these, 4,543 combined ante-natal and baby clinics were held in various parts of the Island at 77 centres, as against 4,702 clinics at 86 centres in 1935. In some of these centres—especially in those in the health unit areas ante-natal clinics were held separately from the baby clinics and the attendance increased considerably since the innovation was made as will be seen from the table below. It will be noticed that the number of centres and of the clinics held were respectively less than those for 1935 and yet the attendance of expectant mothers, infants, and pre-school children was in each case higher in the year under review, particularly remarkable in case of expectant mothers whose attendance has increased by about 70 per cent.

Visits paid to these clinics during the year, as compared with those in 1935 are as follows:—

	1935.	1936.
Expectant mothers	10,350	17,393
Infants	28,028	29,563
Pre-school children ..	16,753	18,611

Midwifery.—141 trained midwives under supervision were provided by Government (73 at hospitals and 68 at health units), as against 141 in 1935; 126 by local authorities and 121 by estates, as against 126 and 96 respectively in 1935; making a total of 388 midwives, as against 363 in 1935. There are about an equal number of trained midwives doing private work.

The registration of midwives under Ordinance No. 26 of 1927 is at present compulsory only in the city of Colombo where the number registered amounts to 524, as against 445 in 1935. During 1936 the areas of the local authorities, Galle Municipality, Kurunegala, Kolonnawa, Negombo, Beruwala, and Ambalangoda Urban District Councils, and Dondra Sanitary Board town were brought under the operations of section 57 of the Medical Ordinance, 1927—the object being to prohibit practice by untrained and uncertificated midwives.

The examination of pupil midwives is undertaken by the Ceylon Medical College Council. Training is carried out at the De Soysa Lying-in Home in Colombo, Galle hospital, Kegalla hospital, Green hospital, Manipay, and the McLeod Mission hospital at Inuvil. During the year 145 women, as compared with 102 in 1935, received training as follows:—

Hospital.	Class of Pupils.	Number.
Galle Hospital	Stipend pupils ..	11
Kegalla Hospital ..	do. ..	6
Lying-in Home	do. ..	41
Do.	Non-stipend ..	58
Do.	Trained nurses ..	29
		145

Maternity Beds in Hospitals.—At the De Soysa Lying-in Home in Colombo there were 107 beds. Of the remaining 106 Government hospitals with a total

of 11,609 beds 77 had maternity wards with a total of 481 beds in 1935. The other hospitals, although not provided with maternity wards, take maternity cases into their general wards. During 1936 one new maternity ward was built at Negombo with 20 beds.

Public Health Nursing.—At the end of 1935 there were 23 public health nurses. During 1936, nine more nurses were selected and given training at the Kalutara Totamune Health Unit, thus bringing up the total of public health nurses at the end of 1936 to 32. There is one vacancy and six new appointments were sanctioned from October, 1936, and these will be made in 1937.

Voluntary Associations and Child Welfare Work.—The assistance of voluntary associations continues to be received in connection with the carrying out of child welfare work. There are in the Island 48 such associations under the names of social service leagues, health leagues, child welfare leagues, &c., actively associated with the work as compared with 45 associations in 1935.

The total income of these societies as far as is known has been Rs. 25,019 during the year, of which Rs. 22,167 or 88 per cent. has been expended on child welfare work.

Twenty-seven local authorities, viz., those of Panadure, Kandy, Kurunegala, Beruwala, Chilaw, Batticaloa, Jaffna, Gampola, Nawalapitiya, Kalutara Urban District Council, Kalutara Sanitary Board, Beliatta, Weligama, Wadduwa, Anuradhapura, Colombo, Moratuwa, Hanwella, Nittambuwa, Badulla, Ambalangoda, Trincomalee, Nuwara Eliya, Matara, Dehiwala, Kotte, and Kolonnawa, contributed to the finances of these voluntary associations.

Work of Lady Doctors.—There were 4 lady doctors stationed at the following towns, viz., Beruwela, Batticaloa, Trincomalee, and Puttalam, for work among women and children chiefly of the Muslim population. They attend to sick women and children at the dispensary, visit in the homes, free of charge in the case of the poor, those who cannot attend at the dispensary, hold ante-natal and baby clinics and do a certain amount of health educational work. The doctors at Beruwela and Trincomalee work in conjunction with the local health unit. The others work without adequate staff for effective work.

The four doctors paid 4,709 home visits and attended to, both in the home and at the dispensary, 203 mothers at child birth, 460 puerperal cases, 1,235 sick expectant mothers, 1,897 sick infants, and 6,778 sick pre-school children. They have held 830 clinics at 14 centres at which 1,285 expectant mothers paid 3,458 visits, 482 infants paid 5,693 visits, and 236 pre-school children paid 4,001 visits.

VI.—HOSPITALS, DISPENSARIES, AND VENEREAL DISEASES CLINICS.

HOSPITALS AND DISPENSARIES.

General Remarks.—All parts of the Island are generously provided by the State with hospitals and dispensaries. In and around Colombo are the General Hospital (943 beds), Lying-in Home (107 beds), Eye Hospital (56 beds), Women's Hospital (46 beds), Children's Hospital (89 beds), Female Venereal Diseases Hospital (29 beds), Police Hospital (36 beds), Tuberculosis Hospital (349 beds), Tuberculosis Sanatorium (72 beds), and Infectious Diseases Hospital (168 beds). Elsewhere there are 91 Government hospitals with 6,750 beds and a Tuberculosis Sanatorium with 44 beds. In addition there are the Prison Hospitals, Lunatic Asylum, and Leper Asylums mentioned in Section VII. with accommodation for more than 3,000 patients. The number of hospital beds provided by Government is approximately 2 per 1,000 of population.

The number of dispensaries central (228) and branch (165) and visiting stations (281) maintained by Government was 674 in 1936 against 632 in 1935. In addition to these the following special institutions were maintained for the treatment of out-patients:—King Edward VII. Memorial Anti-Tuberculosis Institute, Colombo; Grenier Ear, Nose, and Throat Clinic, Colombo; Dental Institute, Colombo; and special ophthalmic clinics at the Kandy, Galle, Jaffna, Batticaloa, and Badulla hospitals.

During the year under review, the number of estate hospitals maintained by the proprietors of estates was 85, as against 82 in 1935, and the number of estate dispensaries was 733 against 727 in 1935.

324,265 in-patients with 18,990 deaths, giving a mortality rate of 5.85 per cent. were treated in the various Government hospitals. The figures for the previous year were 395,116, 26,673 and 6.75 respectively. In the Government dispensaries and out-patient departments attached to Government hospitals 6,104,682 patients who paid 9,075,354 visits were treated, as against 8,095,730 and 11,801,005 visits the previous year.

The diseases treated at hospital out-patient departments and dispensaries were as follows:—

I.—Communicable Diseases.

Enteric fever	249
Fevers of obscure causation	1,000
Malaria fever	2,692,129
Cerebral malaria	1,064
Malaria cachexia	180,231
Malarial cirrhosis	39
Measles	181
Whooping cough	1,477
Diphtheria	43
Influenza	177,699
Mumps	222
Dysentery (all forms)	28,631
Amoebic hepatitis and liver abscess	58
Leprosy	63
Erysipelas	77
Chickenpox	132
Yaws	10,666
Hydrophobia	22
Tetanus	34
Pulmonary tuberculosis	2,708
Other tuberculous diseases	365
Syphilis (all varieties)	5,708
Soft chancres	236
Gonorrhoeal complications (arthritis rheumatism, &c.)	5,610
Gonorrhoea (acute and chronic)	16,518
Filarial diseases	267
Acute rheumatic fever	529
Puerperal fever	2,520

II.—General Diseases.

Malignant tumours—carcinoma, Sarcoma	45
Non-malignant tumours	839
Chronic rheumatism	314,813
Arthritis (acute and chronic)	7,683
Diabetes mellitus	1,281
Anaemias (of unknown causation)	41,551
Goitre	470
Leukaemias	427
Acute poisonings	116
Other general diseases	36,343

III.—Local Diseases.

Diseases of the nervous system	33,783
Diseases of the eye	72,577
Diseases of the ear	52,089
Diseases of the heart and blood vessels	6,197
Diseases of the lungs and pleura	247,902
Diseases of the gastro-intestinal tract	594,618
Diseases of the liver and gall bladder	4,717
Diseases of the urinary system	29,715
Diseases of the generative systems	60,889
Diseases of the spleen	10,075
Diseases of the lymphatic system	5,988
Diseases of the skin and cellular tissues	276,816
Diseases of the bones and joints	5,482
Ankylostomiasis	258,720
Other helminthic diseases	393,975
Ulcers	323,965
General injuries	22,346
Local injuries	130,773
Other local diseases	42,009

REPORT ON COLOMBO HOSPITALS.

A brief summary of the work done in the chief Colombo hospitals is given below:—

General Hospital, Colombo.—The number of patients treated in the hospital during 1936 was 29,757 (1,552 paying and 28,205 non-paying patients), as compared with 31,023 (1,105 paying and 29,918 non-paying) in the previous year.

There were 3,180 deaths, as against 3,152 in 1935 and the percentage of deaths to those treated was 10.9. The daily average sick in hospital was 1,347.69, as compared with 1,359.19 in 1935.

The maximum and minimum number of patients in hospital on any one day during the year was as under:—

	Maximum.	Minimum.
Paying section ..	95 on 20.11.36 ..	57 on 25.4.36
Non-paying section	1,478 on 17.2.36 ..	1,046 on 15.11.36

The number of operations performed was 5,033, of which 4,342 were performed in the hospital and 691 (minor operations) at the out-patients' department, as against a total of 4,180 (3,505 in hospital and 675 on out-patients) in the previous year.

The total number of patients treated at the out-patients' department amounted to 103,644, as compared with 79,250 in 1935. The number of visits paid by patients was 294,583 with a daily average of 807, as against 295,403 in 1935 with a daily average of 809.

An outpatient clinic for diseases of women was started in October, 1934. The clinic is held on Tuesdays and Thursdays between 9.30 A.M. and 12 noon. 1,020 new patients (3,500 visits) were examined and treated during 1936.

Pathological Department.—The staff consists of a full-time Pathologist and two qualified assistants. The following number of specimens was examined and reported upon during 1936:—

Urines	20,461
Faeces	10,993
Gastric contents	1,174
Sputa	3,408
Bloods	21,389
Cerebro spinal fluids	1,024
Smears	663
Tissue sections, General Hospital	763
Tissue sections, Outstation Hospitals	302
Tissue sections, Post-mortem room	280
	60,457

271 post-mortems were held during the year.

X'Ray Department.—9,111 patients in the non-paying section and 1,026 patients in the paying section, making a total of 10,137 patients underwent X'ray examination, as against a total of 8,010 in 1935. These examinations necessitated the use of 12,960 films and the taking of nearly 35,000 radioframes. In the electro-therapeutic section 6,685 sittings were given to non-paying patients (including patients from the 2nd class paying wards from whom no charges are recovered) and 689 sittings to paying patients, making a total of 7,324, as compared with 10,467 the previous year.

172 cases had radium treatment for different diseases, chiefly cancer, as compared with 167 cases in 1935.

The Ear, Nose, and Throat Department.—The Grenier Ear, Nose, and Throat Clinic is held at the outpatient's department, General Hospital, on three afternoons a week—Tuesdays, Thursdays, and Saturdays—from 1 to 4 P.M., and the Surgeon-in-Charge is allotted 10 beds (6 for males and 4 for females) in the wards of the

hospital for cases requiring indoor treatment. 9,079 new outpatients were treated during the year. The total number of visits made by the new and old patients was 17,569, as against 7,874 and 15,458 respectively in 1935.

In addition, there is the school children's clinic which is held on Tuesdays and Thursdays in the afternoons. 614 children attended the clinic and paid 1,040 visits.

The number of patients treated in the wards was 346 (males 213 and females 133).

595 operations—both major and minor—were performed on two days a week (Mondays and Fridays) at the Paying Section theatre commencing at 1 P.M.

Dental Institute, Colombo.—The professional staff consists of one qualified Dental Surgeon, one House Surgeon, two apothecary assistants, a matron, and a nurse.

26,513 new patients were treated during the year under review, as against 27,973 in 1935. The total number of visits made by the new and old patients was 44,350.

The number of patients was made up as follows :—

Patients sent from hospital wards	255
Children attending the school clinic	3,070
Other patients	23,188
	26,513

The following treatments were given :—

Extractions	22,988
Cleaning and filling	6,926
Temporary relief	7,516
Dressing	6,550

Twenty-three cases were operated on at this institute and 10 cases of fracture of the jaw were treated.

De Soysa Lying-in Home.—Although a small increase in the bed strength has been made, the urgency for increased accommodation to enable the work to be carried out under satisfactory conditions is once more emphasized.

The number of cases under treatment in 1936 was 9,199, as against 6,731 in the previous year and 6,563 in 1934. The daily average number of beds occupied was 177.27 and the mortality rate was 1.85, as compared with 146.25 and 2.8 respectively the previous year.

There were 171 maternal deaths and of these 18 were due to malaria, 16 to ankylostomiasis, 112 to puerperal causes, and 25 to non-puerperal causes. There were 292 miscarriages, as against 170 in 1935.

The number of live births was 5,595. Of these infants, 5,205 left the hospital alive, while 390 died after delivery, as against 4,042 and 367 respectively, in 1935. 663 obstetric operations were performed during the year, necessitating the use of forceps in 203 cases, craniotomy in 45 cases, decapitation of child in 2 cases, version in 53 cases, evacuation of the uterus in 96 cases, manual removal of placenta in 62 cases, induction of labour in 29 cases, caesarean section in 6 cases, for complications of breech in 42 cases, and 125 minor operations. Labour was classified as normal in 4,932 cases. In 51 cases of placenta praevia, 23 infants were born alive and 28 were dead : 42 mothers recovered and 9 died. In 86 cases of accidental haemorrhage 1 mother died and 58 infants were stillborn. 278 cases of pre-eclampsia were treated with 13 deaths. Of the 105 cases of eclampsia treated during the year 93 mothers recovered and 12 died. There were 156 cases of twins and 1 case of triplets.

With a view to limiting the number of admissions and lessening the state of overcrowding in the wards, a start was made in 1933 to provide an external midwifery service in the area of Colombo round about the Lying-in Home. This

service is gradually being extended and there were 83 cases against 95 in 1935 of confinement conducted by medical students under the supervision of a specialist officer of the staff of the Lying-in Home. This Medical Officer also attended 101 calls by midwives working in the town.

The institution continued to be the chief training school for midwives in the Island. The professional staff consisted of one Medical Superintendent, one Assistant Obstetrician, three qualified House Officers, and an Obstetric Registrar.

The Victoria Memorial Eye Hospital.—There are 7 beds and 1 cot in the paying section and 43 beds and 5 cots in the non-paying section of this hospital.

26,066 new outpatients were treated during the year, as against 25,682 outpatients in 1935. The total number of visits made by the new and old patients were 70,452.

There were 101 inpatients remaining in hospital at the beginning of the year and 2,735 patients were admitted during the year, as compared with 123 and 2,384 respectively in the previous year. 2,642 patients were discharged and 5 died. The daily average number of inpatients was 160.22.

The total number of ophthalmic operations performed on inpatients during the year was 861 and on outpatients 1,847, the corresponding figures for the previous year being 650 and 2,092 respectively.

The school clinics which are held on Tuesdays and Fridays at 2.30 P.M. continued to be well attended. 599 children (1,267 visits) received treatment.

An ultra violet ray apparatus and a diathermy apparatus are in use.

The Lady Havelock Hospital for Women and Lady Ridgeway Hospital for Children.—The total number of patients admitted during the year was 4,264 and with 137 patients remaining from 1935, 4,401 patients (women 1,637, children 2,764) were treated, as against 5,037, 142, and 5,179 patients respectively in 1935.

The daily average sick was 132.28, as against 176.46 in 1935 and 132.08 in 1934. The number of paying patients treated was 162, as against 156 in 1935.

The total number of deaths was 742; of these, 67 were women and 675 were children, showing a mortality rate of 4.7 per cent. for women and 24.4 per cent. for children. The high death rate in the case of children was due to the fact that many children were brought to the hospital in a moribund condition and died within a few hours of admission.

The number of surgical operations performed was 568. Of these, 350 were major and 218 minor operations. The operation mortality rate was .52 per cent., as against 2.0 in 1935.

In the training school for nurses there were 54 pupils, of whom 26 were first year pupils. The professional staff of this hospital consists of the Lady Doctor-in-Charge and two Lady House Officers.

Female Venereal Diseases Hospital.—The total number of patients admitted during the year was 486 and with 12 patients remaining from 1935, 498 patients were treated in 1936, as against 362 in 1935. The daily average of patients was 20.83, as against 17.96 in 1935. There was one death during the year. The principal diseases treated were syphilis (101 cases) and gonorrhoea (144 cases).

Usually female cases of syphilis and gonorrhoea in the acute stage are treated in this hospital and when hospital treatment is not necessary they attend as outpatients (*vide* report under Venereal Diseases Clinics, page 87), for continuation of treatment.

There is an outpatient department at this hospital where general diseases among women and children are treated and during the year 30,156 patients who paid 55,200 visits were dealt with. Malaria, influenza, ankylostomiasis, venereal, digestive, and skin diseases were the most prevalent ailments treated.

The Infectious Diseases Hospital (Angoda), Colombo.—There remained 76 patients in hospital at the end of 1935 and 2,990 patients were admitted during the year, making the total treated 3,066, as against 2,505 during the previous year. Of these, 163 cases proved fatal, giving a mortality rate of 5.3 per cent., as against 7.8 per cent. during the previous year.

The following are some of the infectious diseases treated and the number of deaths in 1936:—

	Number Treated.	Deaths.
Influenza	22 ..	—
Pneumonia	36 ..	11
Dysentery	266 ..	27
Smallpox	3 ..	3
Enteric fever	99 ..	35
Measles	381 ..	11
Whooping cough	6 ..	—
Diphtheria	40 ..	7
Mumps	157 ..	3
Plague	21 ..	14
Chickenpox	1,445 ..	8
Enteritis and colitis	237 ..	31

REPORT ON OUTSTATION HOSPITALS.

Of the provincial hospitals those of Kandy and Galle are the largest and most important.

Kandy Hospital.—There are 276 beds and the medical staff consists of a Superintendent, Physician, Surgeon, Ophthalmic Surgeon, and 5 House Officers. The hospital is also a nurses' training school and 51 pupils were under training during the year.

There were 15,544 admissions in 1936, as compared with 22,425 in 1935. The daily average sick in hospital was 501.86, as against 583.94 in 1935; the percentage of deaths to total treated was 6.10, as against 10.12 in 1935.

The following table gives the principal diseases treated and the number of deaths:—

	Admissions.	Deaths.
Enteric fever	133 ..	38
Malaria	3,547 ..	100
Dysentery	57 ..	8
Pulmonary tuberculosis	151 ..	43
Ankylostomiasis	913 ..	59
Pneumonia	673 ..	225
Venereal diseases	709 ..	9

There were 503 operations performed, 340 major and 163 minor with 41 deaths.

The Eye Institute has become very popular and the Eye Surgeon is kept fully occupied till 2 or 3 P.M. every day. Two wards are allotted for eye cases and are always overcrowded. 1,689 indoor patients were treated in 1936. 11,786 out-door patients, who paid 26,420 visits, were treated. The number of eye operations performed was 1,869, of which 349 were major operations and 1,520 minor operations.

Galle Hospital.—This hospital is situated in Mahamodera, a suburb of Galle, and is near the sea. It has at present accommodation for 279 patients.

The staff consists of a Medical Superintendent, Visiting Physician, Visiting Surgeon, Eye Surgeon, and 3 House Officers. This hospital is also a training centre for nurses with a European Matron and two Nursing Sisters.

The total number of inpatients treated during the year was 12,088 with a daily average of 318.4. Out of these 758 died giving a percentage of 5.88 deaths.

The following were the chief diseases treated:—

Diseases.	Cases.	Deaths.
Dysentery	86 ..	7
Pulmonary tuberculosis	208 ..	44
Enteric fever	345 ..	79
Malaria	1,297 ..	50
Ankylostomiasis	300 ..	11

There were 486 major and 282 minor surgical operations performed during 1936.

In the casualty room 980 cases were attended to and 882 injections were given for parangi and syphilis. In the laboratory 19,909 specimens were examined; of these, 2,808 were blood, 624 sputa, and 6,189 faeces.

In the Eye Institute 11,340 cases (24,813 visits) were treated, and 956 minor and 314 major operations were carried out.

A new X'ray department was started from 1935. The working is in charge of a trained technician.

Training of midwives was started in 1934 and 12 midwives were trained during 1936.

INSTITUTIONS FOR TUBERCULOSIS.

There are four special institutions for tuberculosis in Ceylon, viz., the King Edward VII. Anti-Tuberculosis Institute, Colombo, the Ragama Hospital, the King Edward VII. Sanatorium at Kandana, and King Edward VII. Sanatorium at Kankesanturai.

The institute in Colombo and the two sanatoria were built and equipped from the King Edward VII. Memorial Anti-Tuberculosis Fund, but are maintained by Government.

The Anti-Tuberculosis Institute.—The institute is situated in a central part of Colombo and in addition to the usual clinic rooms has X'ray apparatus, a laboratory, and artificial sunlight apparatus, and serves as a centre for expert diagnosis and treatment. There are no beds at the institute but patients requiring indoor treatment are sent to Kandana or Ragama as accommodation permits. The nurses make a number of visits to patients' homes and are expected to arrange for contacts to attend at the institute for medical examination. 3,640 outpatients who paid 9,891 visits were treated at the institute.

In order to popularize the institute patients suffering from lung conditions other than tuberculosis were treated and about one-third the attendances were by such patients. Now, however, that the institute is well established, an attempt is being made to restrict the work principally to tuberculosis.

The Ragama Anti-Tuberculosis Hospital.—The hospital for tuberculosis at Ragama is 12 miles away from Colombo and is easily accessible by rail and road. It contains 349 beds and is intended for the treatment of advanced or moderately advanced cases of pulmonary tuberculosis.

The number of patients remaining at the end of 1935 was 341 and the number of admissions during 1936 was 1,115 (of which 102 were readmissions). There were 372 deaths, of which 176 were within one month of admission and 149 within six months. 644 patients were discharged, 146 left hospital relieved, and 498 not improved. Out of those relieved, disease became arrested in 83 cases, of which 59 were transferred to Kandana Sanatorium.

The number remaining in hospital on December 31, 1936, was 338 which includes 21 patients remaining for over one year. The daily average number of patients in the hospital was 326.

The new admissions in 1935 and 1936 were from the following provinces :—

Province.	1935.	1936.
Colombo City	299	225
Western	625	523
Central	68	57
Southern	141	91
Northern	19	9
Eastern	8	4
North-Western	75	35
North-Central	15	7
Uva	11	3
Sabaragamuwa	87	59
	1,339	1,013

Usually the cases admitted are in the third stage of the disease (according to Turban Gerhardt's classification) and only rarely are second stage patients seen. The average case showed advanced bilateral involvement below the fourth rib, frequently with localized excavations. Unilateral cases were even below ½ per cent. of those admitted during the year.

Treatment is based on—

(1) Rest,
(2) Graduated exercise,
(3) Symptomatic treatment,
(4) (*a*) Artificial pneumothorax, (*b*) Artificial light,
(5) Education.

The staff is trained to maintain discipline among the patients with regard to rest and graduated exercises. The patients are given regular talks on the benefit of these methods of treatment. Besides regulated walks, patients have regular breathing exercises and odd light jobs in the wards and gardening.

Symptomatic treatment forms a large part of the work. Only about 20 per cent. of the patients are fit for outdoor exercises, the remaining 80 per cent. being an absolute rest or on the first and second stages of graduated labour.

Those requiring operative treatment or artificial light treatment are sent to the General Hospital, Colombo.

Patients are given regular talks on—

(1) How to take care of themselves,
(2) How to avoid spreading tuberculosis,
(3) How to avoid getting it,
(4) How to preserve children from it,
(5) The earliest signs and the importance of early diagnosis and treatment,
(6) How to live on returning home from hospital,
(7) Importance of rest, graduated exercises, and discipline.

The water supply was adequate except during the drought in January to May when the supply was restricted.

The King Edward VII. Sanatorium at Kandana.—This sanatorium is 14 miles from Colombo and has accommodation for 72 patients.

The number of patients remaining at the end of 1935 was 60 and the number admitted during 1936 was 172. There were 2 deaths. In 94 of the 162 patients discharged the disease was arrested, 17 patients were much improved, 2 were improved, 16 had no improvement, 29 were transferred to Ragama hospital being unsuitable for sanatorium treatment, and 4 transferred to Kankesanturai Sanatorium. The number remaining in the sanatorium on December 31, 1936, was 68 and the daily average number of patients was 61.86.

Artificial pneumothorax was tried on 6 cases at the end of 1936. Guaiacol, creosote, and cod liver oil were employed for routine treatment. Colloidal copper morrhuate has been tried in a few cases.

The usual principles of sanatorium regime are applied to patients, viz.—

(1) Rest—mental and physical,
(2) Graduated exercises,
(3) Routine, discipline, and education,
(4) Correct feeding,

supplemented by such therapeutic measures as are required.

The King Edward VII. Sanatorium at Kankesanturai.—This sanatorium on the coast of the Northern Province is a new building erected at the expense of the King Edward VII. Memorial Fund. It has accommodation for 44 patients. A fee of Rs. 2 per day is charged.

The number of patients remaining at the end of 1935 was 12 and the number admitted during the year was 69. Of the 56 patients discharged during the year, disease became arrested in 18 cases, 24 cases were much improved, and 14 were not improved. There were no deaths. The number remaining in the sanatorium on December 31, 1936, was 12.

Rest, feeding, graduated exercise, and health education are the routine treatment. Drugs are not used as a routine, but gold treatment were given to a limited number of patients. Artificial pneumothorax treatment were given in 10 cases, with the disease arrested in 9 cases.

VENEREAL DISEASES CLINICS.

There are three venereal diseases clinics in Colombo, viz., at the General Hospital (outpatient), the Port Surgeon's Office (outpatient), and Female Branch Hospital (inpatient and outpatient).

Venereal Diseases Clinic, General Hospital, Colombo.—This clinic takes place daily, except on Sundays, commencing at 2 P.M. On Mondays and Thursdays cases of syphilis, parangi, and gonorrhoea are treated; on Tuesdays, Wednesdays, and Saturdays cases of urethritis are microscopically examined and dark ground illumination of all venereal sera is done; on Tuesdays and Fridays special treatments, such as prostatic massages, dilatation of strictures, and urethroscopic work, are carried out.

All cases requiring indoor treatment are admitted to a ward in the General Hospital.

The following table gives comparative figures of the cases treated at the clinic for the past three years:—

Cases.	1934.	1935.	1936.
Syphilis	346	280	1,289
Soft sores	7	47	—
Gonorrhoea	572	392	1,531
Yaws	14	13	10
Other diseases	69	107	99
	1,008	839	2,929

Port Venereal Clinic for Seamen.—This is a clinic held in a special room at the Port Surgeon's Office, established under the Brussels International Agreement, 1924.

Forty persons were given treatment free during the year; of these, 21 cases were syphilis which received Salvarsan treatment, and 19 were gonorrhoea. The fact that Colombo is not a terminal port, but merely a port of call where most ships spend only a few hours, accounts for the comparatively small number of sailors seeking treatment at the clinic.

Most of the cases are diagnosed by clinical examination only, since there is usually insufficient time to arrange for serological or bacteriological examination at the Bacteriological Institute.

Venereal Diseases Clinic at the Female Branch Hospital.—The number of persons treated in the clinic for the past three years were as follows:—

Cases.	1934.	1935.	1936.
Syphilis	363	178	227
Gonorrhoea	498	258	367
Yaws	1	4	—
Other diseases	370	596	369
	1,232	1,036	963

These 963 persons paid 2,806 visits during 1936. The clinic is held on two evenings a week—Tuesdays and Fridays. Most of the cases attending the clinic are married women and many of them are cases of chronic gonorrhoeal infection. The existence of the clinic is well known among the hospital class of patients, who have no objection to injections or other forms of treatment.

Venereal Diseases Clinic at the Kandy Dispensary.—This clinic is held on two evenings a week—Mondays and Saturdays. The cases treated during the year were as follows:—

Syphilis	97
Gonorrhoea	122
Yaws	8
Other diseases	42
	269

These 269 persons paid 487 visits during 1936.

Besides the particulars given in respect of the four clinics, 7,382 inpatients (with 127 deaths) in the various hospitals and 28,072 outpatients at dispensaries and out-patients' department of hospitals in the Island were treated for venereal diseases during the year, as against 6,149; 98; 18,939 respectively in 1935.

MEDICAL INSTITUTIONS AIDED BY GOVERNMENT.

The following institutions received financial aid from Government during the year:—

(1) The Victoria Home for Incurables.
(2) Wiseman Hospital, Welimada.
(3) McLeod Hospital, Inuvil.
(4) Green Hospital, Manipay.
(5) Jevon's Dispensary, Puttur.
(6) The Kalmunai Methodist Women's Medical Mission.
(7) The Talawa Medical Mission.
(8) The Denepitiya Medical Mission Hospital, Southern Province.

Numbers (1), (4), and (8) are for males and females; numbers (2), (3), and (5) to (7) are for females and children only.

HOSPITAL RETURNS, &c.

Charts and returns of hospital will be found at the end of this report.

VII.—PRISONS AND ASYLUMS.

PRISONS.

During the year 1936, twelve prisons were maintained by Government in the following places:—Central Prisons at Welikada and Hulftsdorp (Colombo), Bogambara (Kandy), Mahara (14 miles north-east of Colombo), and Jaffna; local Prisons at Anuradhapura, Badulla, Batticaloa, Galle, and Negombo; remand prisons at Welikada (Colombo) and Kandy.

On December 31, 1935, there were in all the prisons a total of 3,587 convicted prisoners (3,529 males and 58 females). During the year under review 15,180 males and 444 females were admitted and 15,295 males and 453 females were discharged. Twenty-five male prisoners died. On December 31, 1936, 3,389 male and 49 female convicted prisoners remained in all the prisons.

On the whole the health of the prisoners in all prisons was satisfactory. In Jaffna prison dysentery and colitis were once again the prevalent diseases and steps were taken to get at the source of fly breeding and thereby stop the annual recurrence of dysentery. There were only two cases of typhoid fever during the year.

In Kandy prison there was a marked decrease in the number of malaria cases. At Anuradhapura malaria was prevalent throughout the year but not to a marked degree. There were no infectious diseases.

At Mahara, owing to the severe drought that prevailed during September and October, there was an increase of diseases of the alimentary system. By the provision of suitably balanced and varied diets to the prisoners, diseases causing neuritis and skin ailments were reduced to a minimum.

All new prisoners at Mahara prisons were given anti-typhoid inoculations.

160 prisoners at Batticaloa and 3,094 prisoners at Welikada received treatment for ankylostomiasis. Anti-malaria measures were adopted at Kandy and Anuradhapura.

The number of hospitals maintained exclusively for prisoners remained unchanged at nine. At the Welikada prison hospital 12 of the 192 beds are for females. Elsewhere hospital accommodation is provided only for male prisoners, females being sent to the local civil hospital.

TABLE.—Average number of Prisoners and Work of the Prison Hospitals.

Name of Prison.	Daily Average in Prison.	Number of Hospital Beds.	Daily Average Sick in Hospital.	Total Number of In-patients treated.	Total Number of Out-patients treated.	Total Number of Deaths.	Death Rate per cent. of In-patients in Hospital	Chief Diseases treated (for meaning of figures, please see Keys* below).
Welikada	1,385·16	180	84·58	2,169	22,257	6	·27	1, 3, 4, 5, 6, 7, 9, 12, and 16
Welikada Remand	305·36	—	—	—	8,586	—	—	
Hulftsdorp	170·83	—	—	—	8,215	—	—	
Mahara	691·05	55	35·63	1,740	16,165	15	·69	1, 2, 3, 5, and 16
Bogambara	507·80	35	16·86	712	9,453	3	·42	1, 2, 5, 10, 11 15, and 16
Jaffna	350·96	20	8·48	343	3,076	—	—	1, 3, and 16
Negombo	79·80	16	1·93	53	2,280	2	3·98	1, 3, 15, and 16
Galle	109·44	12	1·04	32	654	—	—	1 and 3
Anuradhapura	103·72	12	7·48	251	915	—	—	1, 3, 8, and 16
Badulla	43·38	4	·53	24	1,130	—	—	1
Batticaloa	44·46	5	1·44	61	—	—	—	1, 2, 3, and 5.
	3,791·96	339	157·97	5,385	72,731	26	1·34	

* Key referred to :—

1. Malaria	5. Influenza	9. Chickenpox	13. Abscess
2. Diarrhoea	6. Pneumonia	10. Skin diseases	14. Pulmonary tubereulosis
3. Dysentery	7. Enteritis	11. Enteric	15. Rheumatism
4. Eye diseases	8. Conjunetivitis	12. Mumps	16. Other diseases

ASYLUMS.

(*a*) The Lunatic Asylum, Angoda.

The Government Lunatic Asylum is situated at Angoda, about 6 miles from Colombo, and was built to accommodate 1,830 patients.

During 1936 the average daily number of patients was 2,327—the largest number on any one day being 2,624 and the lowest number 1,940.

The following table shows the daily average number of patients in the asylum for the last ten years :—

1927 ..	.. 1,717	1932 ..	.. 2,426
1928 ..	.. 2,017	1933 ..	.. 2,524
1929 ..	.. 2,267	1934 ..	.. 2,308
1930 ..	.. 2,350	1935 ..	.. 2,308
1931 ..	.. 2,357	1936 ..	.. 2,327

The main buildings consist of six three-storey blocks containing altogether 18 large wards each designed to hold 96 persons. There is also a block of 102 cells in which noisy patients can be locked up. In 1931 2 temporary wards to accommodate 300 quiet male patients were added. There are no paying wards for better class patients and no facilities for modern treatment. Steps have been taken to provide suitable accommodation for paying patients next year and the question of providing facilities for mental treatment is receiving attention.

Uncertified persons sent by the courts for medical observation to determine their mental state are placed in the same wards as certified patients and although it is the custom to speak of the " House of Observation " the term refers not to a building but to the legal state of such uncertified persons while they are in the Asylum.

Attention was drawn in the 1930 report to the serious overcrowding. From 1926 to 1930 the number of inmates of the Asylum had been increasing by nearly 200 a year so that a state of overcrowding had developed which was getting progressively worse. As a result, the death rate from diseases such as dysentery and tuberculosis had become alarmingly high and steps have been taken during the past few years to mitigate to some extent the unsatisfactory conditions under which the patients—in particular, the male patients—were living. The question of providing additional accommodation for the inmates has been taken up.

The statistics for 1936 are as follows:—

Asylum.

(Certified Lunatics.)	Males.	Females.	Total.
Remaining at beginning of the year	1,586	853	2,439
Admitted	814	478	1,292
Total treated	2,400	1,331	3,731
Discharged	565	337	902
Died	117	84	201
Remaining at the end of the year	1,718	910	2,628

House of Observation.

(Uncertified persons under Observation.)			
Remaining at beginning of the year	129	97	226
Admitted	1,583	820	2,403
Total treated	1,712	917	2,629
Transferred to Asylum	813	477	1,290
Discharged	702	323	1,025
Died	54	33	87
Remaining at end of year	143	84	227

Court.—A court for the disposal of lunacy cases was established at the Asylum on January 16, 1930, and sits every Thursday. It has been a great benefit and convenience to the patients and to the staff and has resulted in a saving of Government money.

Deaths.—The following table gives an analysis of the deaths during the year:—

	House of Observation.	Lunatic Asylum.	Total.
Ankylostomiasis	3	3	6
Abscess of lung	—	1	1
Cardiac failure	—	2	2
Cellulitis	5	4	9
Cerebral Haemorrhage	2	—	2
Colitis	16	23	39
Dysentery	13	39	52
Enteritis	1	6	7
Epilepsy	—	3	3
Erysipelas	2	2	4
General debility	14	47	61
Influenza	2	1	3
Malaria	3	2	5
Pulmonary tuberculosis	4	39	43
Pneumonia	6	7	13
Pyaemia	2	1	3
Typhoid fever	—	1	1
Thrombosis	—	2	2
Other diseases	13	12	25
Diarrhoea	1	6	7
Total	87	201	288

Infectious Diseases.—The following table shows the number of cases of infectious diseases occurring during 1935 and 1936:—

	Inmates.		Attendants.	
	1935.	1936.	1935.	1936.
Dysentery	339	271	6	—
Chickenpox	436	36	47	—
Pulmonary tuberculosis	79	134	—	—
Typhoid fever	4	—	4	1
Enteric fever	7	15	—	—
Leprosy	1	4	—	—
Erysipelas	19	7	—	—
Mumps	292	110	32	1
Influenza	—	56	—	—
Poliomyelitis	—	1	—	—
Measles	—	3	—	—
Total	1,177	637	89	2

Dysentery and Pulmonary Tuberculosis.—There were 271 cases of dysentery, of whom 52 died and 134 cases of tuberculosis, of whom 43 died. It is believed that the spread of dysentery, of which an epidemic occurred during the year, is due probably to direct infection from inmate to inmate. The overcrowded dormitories afford opportunities for the dissemination of tubercle bacilli. Isolation of patients already affected is no doubt desirable but lack of accommodation prevents this course. Besides, the physical signs of tuberculosis in the insane, at least in the early stages, are apt to be obscure and make detection difficult.

Accidents.—The number of cases of injury to patients by themselves was 55, by other patients 105, and by attendants nil.

Restraint and Seclusion.—There have been no cases of restraint. Three persons were subjected to seclusion during the year.

Occupation and Amusements.—The male patients were employed mostly in industrial and agricultural work and in maintaining the Asylum grounds in good order. The female patients made uniforms for the staff and other articles for Asylum use.

Games and sports were carried on as usual. There are two tennis and volley ball courts and a cricket ground which were largely used by the patients and attendants.

Two plays were staged by the patients and the attendants for the entertainment of the patients and the public, and the proceeds from these plays were credited to the " Treat " fund.

Newspapers.—Newspapers and magazines were supplied by Government for the staff and inmates.

Laboratory.—4,967 simple laboratory examinations of blood, sputum, faeces, urines, and other clinical tests were made. All other examinations are made at the Bacteriological Institute.

(*b*) Leper Asylums.

There are two Leper Asylums in the Island, one at Hendala, 7 miles from Colombo, and the other on the Island of Mantivu, 3 miles from Batticaloa in the Eastern Province.

Hendala Leper Asylum.—The staff consists of 1 Medical Superintendent, 2 Medical Officers, 2 Apothecaries, a Steward-Clerk, a Mother Superior and 12 Religious Sisters, 2 Overseers, 1 Instructor of Games, 46 male attendants, 9 female attendants, an office peon, a gatekeeper, a dhoby, 4 cooks, and 40 labourers.

The statistics of the hospital are given below:—

	Ceylonese.		Indians.		
	Males.	Femals.	Males.	Females.	Total.
Remaining on December 31, 1935	502	136	79	12	729
Admitted during 1936 ..	102	26	21	5	154
Discharged during 1936 ..	37	13	3	9	62
Died during 1936 ..	43	10	3	—	56
Remaining on December 31, 1936	524	139	94	8	765

Of the 154 admissions, 131 were new cases and 23 were re-admissions. Amongst the new admissions, 106 were Ceylonese and 25 were Indian immigrants. The admissions during the year represented the following types:—

N^1 — 6	C^2 — 62
N^2 — 20	N^3 — 23
C^3 — 4	Non-lepers — 2
C^1 — 37	Total 154

The new admissions were from the following provinces:—

	Ceylonese.		Indians.		Total.		Grand Total.
	M.	F.	M.	F.	M.	F.	
Western ..	49	16	1	—	50	16	66
Southern ..	31	8	3	—	34	8	42
Sabaragamuwa ..	9	1	—	1	9	2	11
Central ..	3	—	16	2	19	2	21
Northern ..	1	—	—	—	1	—	1
North-Western ..	4	1	—	1	4	2	6
Eastern ..	2	—	1	—	3	—	3
Uva	3	—	—	1	3	1	4
	102	26	21	5	123	31	154

From the above admissions it will be seen that about 83 per cent. were Ceylonese and 17 per cent. Indian immigrants.

During the year 62 patients were discharged and the number of deaths was 56, 46 males and 10 females. The percentage of deaths to total treated was 6.34.

There were 765 cases remaining and represent the following types:—

	N[1].	N[2].	N[3].	C[1].	C[2].	C[3].	Non-Lepers.	Total.
Males ..	6..	22..	154..	149..	257..	17..	1..	606
Females ..	3..	9..	29..	43..	53..	6..	— ..	143
Children (under 12 years)	4..	9..	— ..	2..	— ..	— ..	— ..	16
Total ..	13	40	183	194	310	23	1	765

The School.—The school was established in 1920. The number on the roll is 78 with an average attendance of 48.15. English is taught up to the 5th standard, Tamil to the 4th, and Sinhalese to the 6th. During the year the school was examined by the Government Inspector of Schools who was satisfied with the work done by the teachers and the pupils.

The Scout Troop which was inaugurated in 1931 by the Chief Scout Commissioner for Ceylon for the boy-patients at the Asylum is making good progress. At present there are 20 scouts who form 3 patrols. Some of these scouts have been employed as labourers in wards and others have been given plots of ground to grow vegetables and flowers. The Scouts Association has its own funds, and each scout is in possession of a Saving Bank Book, and deposits part of his earnings, which he obtains by doing work for the Asylum, so that he is taught to be thrifty.

The General Condition of the Patients.—Special attention is given to exercise and good food, which are two of the most important adjuncts to treatment. Patients are encouraged to do manual work, such as pottery, carpentry, tailoring, sandal-making, mat-making, mat-weaving, and rattaning; most of the articles made are sold and the patients derive some pecuniary benefit. Patients trained as barbers work among the patients and receive a small sum from the Government for work done for the Asylum. There are some who do vegetable gardening and others occupy their time in flower gardening. Unfortunately, the patients who work are only a minority when compared with the large number who lead a more or less idle life.

Special Treatment of Leprosy.—During 1936 the treatment consisted of (1) Preliminary treatment, (2) Special treatment, (3) Treatment of complications, (4) Surgical treatment, and (5) Experimental treatment.

(1) *Preliminary treatment* consisted of examination of every new admission for prediposing conditions, viz., malaria, hookworm, yaws, scabies, &c., and appropriate treatment instituted.

(2) *Special treatment* consists of treatment with hydnocarpus oil or E.C.C.O. The male patients were treated with hydnocarpus oil while the females were treated with E.C.C.O. The method was similar to what was done before but the old practice of mass treatment was superseded by individual treatment.

Here patients for treatment were classified into 3 groups, viz., Group 1, Neural or very early cutaneous cases; Group 2, Moderately advanced cutaneous cases; Group 3, Highly advanced cutaneous or late neural cases.

In group 1 intradermal injections were generally adopted with very good results. In group 2 subcutaneous injections were generally adopted but the dose was gradually increased and intensive doses up to 10 c.c. were reached in the final stages. In group 3 injections were given as a placebo and the maximum dose did not exceed 4 c.c.

A description of this new method is given below:

Method of Individualized Treatment.—Every patient seeking treatment is first seen by the Medical Officer who places him or her in the proper group. Each patient is at the same time given a treatment card which has a distinctive colour according to the group to which he or she belongs. On the card is written the date of injection, the dose to be given and the number of the last injection. The card is retained by the patient and is produced before each injection to the Medical Officer. One glance at the card enables one to see how many injections the patient has had, what dose is being given and whether the patient has been regular, &c. The Medical Officer will vary the dosage each time he thinks necessary. This method calls for greater attention and scrutiny of the patients and involves a great deal of time and labour.

Inunctions of oil is a popular mode of treatment with a number of patients and is an adjunct to injection treatment. In a number of cases this method of treatment has given very encouraging results.

(3) *Treatment of Complications.*—Complications consist of nerve pains, inflammation of nerves, reaction fever inflammatory patches, pruritis, haemoptysis, and diarrhoea besides intercurrent diseases. No new methods have been adopted in these conditions. They are all treated by general methods and disappear in course of time though some conditions like pruritis and nerve pains are often very intractable. Some of these conditions have benefited considerably under experimental treatment which is described under that head. Eye complications are very common and intractable. The Eye Surgeon visits the place once a quarter and advises in the treatment to be adopted.

(4) *Surgical treatment* consists of scraping the chronic and perforating ulcers, cleaning and applications of adhesive plaster and excision of metatarsal bones in sinuses due to diseased bones and incisions in cellulitis. The nature and number of operations with the results are reproduced elsewhere in tabular form.

(5) *Experimental Treatment.*—Several drugs have been experimented with to note if any have any particular action in these cases or in complications. They are as follows:—

Zymbgl Copper. These are injections of irradiated copper and have been received as samples for trial. Eight cases were treated with the drug. The injections were given intramuscularly and intravenously. The intramuscular route has been found to be very painful. The results have not been very satisfactory.

Mercurochrome.—A 1 per cent. solution of this drug was injected intravenously in cases of nerve pains and reaction fever. In reaction fever the results were variable and not very satisfactory while in nerve pains it certainly relieved and several patients who have had it have asked for it to be repeated.

Potassium iodide and iodine injections as it was given last year was further tried in cases of nerve pain. The results have been satisfactory but the benefit is only temporary.

Lepra Vaccine.—This was a German preparation of M. leprae. A few bulbs were received as samples and administered intramuscularly to 8 patients. The results have been disappointing.

Liquor Arsenicalis (b.P.) was administered to some patients suffering much with nerve pains. 1 c.c.-2 c.c. was injected into or in the neighbourhood of the sheath of the painful nerve at a convenient site. The results have been encouraging but further experiments are necessary to come to any definite conclusion.

Magnesium sulphate in a 5 per cent. solution in boiled water was injected intravenously in cases of leprosy and for reaction. In a few cases it did good but on the whole it has not been found to be satisfactory. Besides it was painful so it was given up.

Brilliant Green and Trypan Blue.—These drugs in solution were given a trial over a year. The results have not been striking and hence they have been discontinued. The only dye that has been of some use is Mercurochrome. This drug is used in this institution up to date and a special description of its use and results are given above.

Dettol.—This disinfectant has been given an adequate trial for the past one year for dressing ulcers. The results in several cases were so satisfactory that this preparation has found a permanent place in this institution for dressing of ulcers, sinuses, and operation wounds.

Boiled milk and whole blood have been tried as in the previous year. In reaction fever it is of some benefit possibly due to protein shock rather than to any specific effect.

Mantivu Leper Asylum.—The institution which has been in existence for 15 years is situated on an island of about 160 acres, in a large lagoon near Batticaloa. Male patients are housed in 24 two-roomed cottages each with its own kitchen, and in a number of hospital wards. There is accommodation for 180 patients. The female patients all live under hospital conditions in wards. Although it was originally intended that the institution should be conducted as a leper colony, a large staff of attendants, garden labourers, &c., is maintained; but the Medical Officer-in-charge by encouraging the patients to engage in useful work and to become to some extent self-supporting, has been able to reduce his staff of attendants and labourers.

At the end of 1935 there were 211 lepers remaining in the asylum. There were 20 admissions and 1 re-admission during 1936 and 32 cases were discharged. There were 14 deaths and the percentage of deaths to total treated was 6.03. The daily average number of patients in 1936 was 204.1. There were 185 lepers remaining on December 31, 1936.

Treatment.—This is (1) general, (2) special, and (3) surgical.

(1) *General.*—More time is spent on the general treatment than on the special treatment and the results are better. What the patients require most are good food, healthy surroundings, and open air exercise.

(2) *Special Treatment.*—This consists of the oral administration of hydnocarpus oil, the subcutaneous and intra-muscular injections of E.C.C.O. The oil is taken in milk and the dose varies according to the patient. Some patients prefer to rub the oil on various parts of the body and this relieves itching. E.C.C.O. is given in doses of $\frac{1}{2}$ to 5 c.c. and in special cases where there is greater tolerance, larger doses up to a maximum of 10 c.c. are given. E.C.C.O. injections were given to 160 patients during the year. Selected cases were given intradermal injections. Saturated solutions of magnesium sulphate were given to patients barring reaction. The dose was from $\frac{1}{2}$ c.c. onwards. The results have been very favourable in bringing down the temperature and in cutting short the period of reaction. Ephedrine injections also had a ready response in many cases.

(3) *Surgical Treatment.*—Only 4 major operations and 60 minor operations were performed during the year.

VIII.—METEOROLOGY.

The following report was prepared by the Superintendent, Colombo Observatory :—

Rainfall.—This has been, on the whole, about normal during the year. Excesses and deficits were irregularly distributed, the latter predominating in the north, the former in the south.

The highest yearly total recorded during 1936 was 252.89 inches at Kenilworth. Yearly totals of over 200 inches were also reported from Carney, Watawala, Norton Bridge, Maliboda, and Labugama. The greatest excess above average was 41.6 inches at Nilloomally. Excesses over 30 inches were also recorded at Labugama, Batapola, Kenilworth, and Diwulana. The highest yearly averages (1911-30) are at Carney 231.6 inches, Watawala 219.5 inches, and Kenilworth 219.2 inches. Other stations with yearly averages over 200 inches are Norton Bridge, Ingoya, Maliboda, Padupola, and Blackwater.

The lowest totals recorded during the year were 25.07 inches at Delft, 25.71 inches at Point Pedro, and 26.57 inches at Ramanathan College, Chunnakam. Yearly totals of less than 30 inches were also reported from Elephant Pass Saltern and Kankesanturai. The greatest deficits below average were 26.4 inches at Point Pedro, and 25.2 inches at Kebitigollewa, while deficits of more than 20 inches were also reported from Tanamalwila, Kilinochchi, Kankesanturai, and Etnawala. The lowest rainfall average (1911-30) is 35.7 inches at Yala, while other stations with yearly averages of less than 40 inches are Marichchukkaddi, Nochchikkali, Ponparippu, Kalpitiya, Mannar Waterworks, and Mannar Kachcheri.

Temperature.—The low-country stations with the highest and lowest mean shade temperature for 1936 were Trincomalee with 82.3°F., and Galle with 79.6°F. The figures for Colombo and Kandy were 80.4°F. and 77.1°F., respectively, while Diyatalawa and Hakgala, at altitudes of 4,100 and 5,600 feet, had mean shade temperatures of 68.0°F. and 62.5°F. The highest shade temperature recorded during the year was 97.8°F., at Trincomalee, on May 2. The lowest shade temperature recorded this year at low-country stations was 61.1°F., at Kurunegala, on January 29, while the lowest shade temperature recorded at Nuwara Eliya, at an altitude of over 6,000 feet, was 29.0°F., on January 5. The highest and lowest shade temperatures recorded this year at Colombo were 92.3°F., on March 14, and 66.5°F., on December 30.

Returns.—Meteorological returns for the towns of Colombo and Nuwara Eliya are given below :—

Colombo Observatory, 1936.

Month.	Temperature. Mean Solar Maximum. °F.	Mean Minimum on Grass. °F.	Mean Shade Maximum. °F.	Mean Shade Minimum. °F.	Mean Temperature. °F.	Rainfall. Amount in Inches.	Degree of Humidity Day. %	Night. %	Winds. General Directions. A.M.	P.M.	Average Force. Miles.
January	141·1	66·6	85·4	71·1	78·2	2·52	67	88	NE	NNW	113
February	144·0	69·0	86·4	73·1	79·8	4·07	68	88	ENE	W	98
March	142·0	71·0	87·4	74·1	80·8	5·29	69	88	E	W	101
April	143·2	73·2	89·0	77·2	83·1	2·86	68	86	Var.	W	124
May	132·8	74·4	85·4	76·3	80·8	33·81	77	88	SW	WSW	157
June	139·6	73·6	84·8	76·3	80·6	5·97	75	84	SW	SW	146
July	139·1	74·7	84·4	77·8	81·1	1·88	76	82	WSW	WSW	168
August	141·9	74·1	85·0	77·1	81·0	1·15	77	89	WSW	WSW	145
September	139·0	73·6	85·3	75·8	80·6	8·09	76	91	SW	WSW	130
October	144·3	72·9	85·2	75·1	80·2	10·69	77	91	Var.	W	111
November	143·4	72·0	84·7	73·9	79·3	15·89	78	93	Var.	W	96
December	141·9	70·1	84·8	72·8	78·8	7·94	76	93	NE	Var.	108
Year	141·0	72·1	85·6	75·0	80·4	100·16	74	88			125

Nuwara Eliya, 1936.

Month.	Temperature. Mean Solar Maximum. °F.	Mean Minimum on Grass. °F.	Mean Shade Maximum. °F.	Mean Shade Minimum. °F.	Mean Temperature. °F.	Rainfall. Amount in Inches.	Degree of Humidity. Day. %	Night. %	Winds. General Directions. A.M.	P.M.	Average Force. Miles.
Januray	—	39·7	68·4	43·6	56·0	4·17	64	89	—	—	—
February	—	42·7	70·9	46·0	58·4	1·93	66	93	—	—	—
March	—	45·1	69·6	47·4	58·5	3·78	74	93	—	—	—
April	—	43·4	—	46·3	—	0·42	64	93	—	—	—
May	—	51·4	—	53·0	—	22·60	85	97	—	—	—
June	—	51·7	67·2	54·2	60·7	5·88	80	88	—	—	—
July	—	53·5	65·3	55·0	60·2	11·25	88	94	—	—	—
August	—	51·8	66·3	54·2	60·2	3·22	85	94	—	—	—
September	—	50·4	67·6	52·2	59·9	12·50	86	97	—	—	—
October	—	48·4	69·1	50·8	60·0	6·13	78	97	—	—	—
November	—	48·9	68·0	51·0	59·5	3·54	80	97	—	—	—
December	—	48·3	66·8	50·4	58·6	15·53	82	97	—	—	—
Year	—	47·9	67·9	50·3	59·2	99·95	78	94			—

IX.—SCIENTIFIC.

(1) BACTERIOLOGICAL INSTITUTE.

The examinations carried out at the Bacteriological Institute for the year were—

Nature of Specimens.	Official.	Private.	Total.	Positive.	Negative.
Blood for typhoid agglutination	4,970	31	5,001	2,112	2,889
Blood for paratyphoid A agglutination	2,514	8	2,522	30	2,490
Blood for paratyphoid B agglutination	4,338	9	4,347	48	4,299
Blood for Wassermann test	7,678	172	7,850	1,348	5,912
Blood for malarial parasites	2,877	94	2,971	436	2,535
Human material for *B. pestis*	47	—	47	23	24
Rats for *B. pestis* ..	759	—	759	61	698
Sputa for tubercle bacilli ..	690	23	713	136	577
Sputa for pneumococci ..	13	—	13	8	5
Urine for bacteriological examination	414	28	442	—	—
Urine for chemical examination	1,409	35	1,444	—	—
Secretions for gonococci ..	895	36	931	228	703
Secretions for diphtheria bacilli	614	15	629	140	489
Faeces for *B. dysenteriae* ..	2,435	5	2,440	216	2,224
Faeces for *E. histolytica* ..	42	133	175	10	165
Faeces for ova of intestinal parasites	526	46	572	375	197
Secretions for *B. leprae* ..	9	1	10	1	9
Evacuations for cholera vibrio	390	—	390	16	374
Scrapings for spirochaetes..	13	15	28	8	20
Faeces and urine for *B. typhosus*	27	—	27	9	18
Specimens for Anthrax ..	4	—	4	3	1
Miscellaneous specimens ..	736	9	745	—	—
Water for bacteriological examination	87	21	108	—	—
	31,487	681	32,168	—	—

The doses of vaccines prepared and issued were—

Nature of Vaccines.	Official.	Private.	Total.
Autogenous vaccines (10 doses)	66	30	96
T. A. B. vaccines (doses) ..	48,987	282	49,269
Gonococcal vaccines (doses) ..	17,516	156	17,672
Staphylococcal vaccines (doses)	348	30	378
B. coli vaccines (doses) ..	204	20	224
Cholera vaccines (doses) ..	2,606	980	3,586
Plague vaccines (doses) ..	7,535	244	7,779
Streptococcal vaccine (doses)	673	10	683
	77,935	1,752	79,687

The following table shows the specimens of faeces received from four institutions for the examination for *E. histolytica* and *B. dysenteriae* :—

Name of Institution.	No. of Specimens.	*E. histolytica.*	*B. dysenteriae.*	Mucus.	Blood and Mucus.	Giardia Flageilates, &c.	Percentage in which *E. histolytica* or *B. dysenteriae* were found when Blood and Mucus present.
General Hospital	184	15	20	162	140	9	25·0
Mahara Jail, Ragama	470	1	37	328	248	17	15·3
Prison Hospital	662	17	35	498	397	48	13·1
Lunatic Asylum, Angoda	606	59	84	548	513	38	27·88
	1,922	92	176	1,536	1,298	112	

A sum of Rs. 8,245 was received as fees for examination during 1936.

(2) PASTEUR INSTITUTE.

The number of persons who received preventive inoculation against rabies and treatment of the wound was 1,993; of these, 938 were inpatients. Those actually bitten were 1,621, *i.e.*, 81.33 per cent. of the total. The rest either were licked by or handled animals proved or suspected to be rabid.

The sources of infection (animal) of the 1,993 cases treated were dog 1,871; human 49; jackal 27; rat 25; cat 11; goat 5; monkey 3; and bull 2. In 590 of these

cases the biting animal was found positive by microscopic and inoculation tests; in 46 the animal was found to be clinically positive, in 1,235 it was only suspected to be rabid, and the balance 122 was not rabid.

Materials used in and method of treatment.—The material used is a carbolised vaccine consisting of 1 per cent. suspension of fixed virus brains and spinal cords of rabbits in ½ per cent. carbolic acid in normal saline—the strains of fixed virus used were Paris and Lindula. Those bitten on the head or severely on the body were given 18 injections, others bitten or scratched 14, and those who were only licked by or had handled suspected animals 7 daily injections of 5 c.c. of the vaccine.

Table I. gives the provinces from which the persons came who received treatment:—

TABLE I.

Western Province	1,267
Central Province	202
Southern Province	176
Northern Province	104
North-Western Province	100
North-Central Province	5
Province of Uva	21
Province of Sabaragamuwa	114
Eastern Province	3
Mysore (India)	1
	1,993

The number of brains from dogs and other animals examined during the year was 583.

Table II. gives the provinces from which the heads were received with the results of examination:—

TABLE II.

Province.	Positive.	Negative.	Unfit.	Total.
Western Province	146	134	29	309
Central Province	37	60	7	104
Southern Province	20	15	10	45
Northern Province	5	8	6	19
North-Western Province	22	18	20	60
Province of Uva	4	4	—	8
Province of Sabaragamuwa	19	13	6	38
	253	252	78	583

The statistics of failures of the preventive inoculation against rabies for 1935 are now complete; they are as follows:—

Number of persons treated	1,875
Number of fatal cases	12
Percentage of failures	0·64

(3) OUTSTATION LABORATORIES.

The following table gives the number of examinations reported from the laboratories attached to the Victoria Memorial Eye Hospital and the Lying-in Home, Colombo, and to outstation hospitals:—

Name of Institution.	Urine.	Faeces Positive for Hookworm.	Faeces Negative for Hookworm.	Blood Positive for Malaria.	Blood Negative for Malaria.	Other Examinations.	Total.
Victoria Memorial Eye Hospital	1,734	19	9	13	95	5,562	7,432
Lying-in Home	5,182	107	69	174	1,105	375	7,012
Outstation.							
Anuradhapura	5,325	4,317	515	1,195	2,738	3,171	17,261
Badulla	5,044	2,611	1,759	738	1,456	330	11,938
Batticaloa	1,985	984	573	222	402	1,252	5,418
Galle	9,756	3,833	1,966	651	1,792	1,911	19,909
Jaffna	2,788	1,148	747	226	724	857	6,490
Kandy	14,753	3,395	1,987	1,498	6,145	5,648	33 426
Kurunegala	6,787	3,890	875	1,321	1,491	2,535	16,899
Ratnapura	2,526	1,519	278	130	968	653	6,074
Mandapam Camp	257	54	113	20	83	5,595	6,122

Research Work.—The research carried out during the year was in connection with a nutritional survey. Full report is published in the Ceylon Journal of Science, volume IV., part I.

Numerous human livers have been examined by Moore's alkaline method for vitamin A content, some interesting results have been obtained with the livers of malnourished children dying at the Lady Havelock Hospital. A publication on this subject will appear in due course.

(4) GOVERNMENT VACCINE ESTABLISHMENT

The number of calves received on hire from the contractor amounted to 578.

During the 12 months 583 calves were used for vaccination and of these 582 were returned to the contractor after the collection of lymph.

" Seed lymph " for the vaccination of calves was obtained at intervals from the Lister Institute of Preventive Medicine, London. A certain number of calves were vaccinated with this seed lymph and the rest of the calves with seed lymph prepared in this establishment. Human vaccination with the lymph pooled from the two sources appears to give better vesiculation than when either of them is used separately.

The glycerinated calf lymph was issued to vaccinators in sealed glass capillary tubes. Where a large number of vaccinations were carried out daily the lymph was issued in collapsible metal tubes of varying capacity.

The total number of tubes of calf lymph issued during the year amounted to 147,715, *i.e.*, sufficient for the vaccination of approximately 443,145 persons. Of this total, 812 tubes were sold realizing a sum of Rs. 708.50. A large quantity of lymph was stored in bulk as a reserve supply.

The weekly returns of vaccinators received at this establishment show that a successful case percentage of 98.78 (primary vaccination) was obtained with the lymph issued during the year.

(5) MEDICAL ENTOMOLOGY.

As in the previous year, the activities of this Division were concerned chiefly with malaria research and control. The field staff of 14 assistants was distributed over a wide area of country, and was engaged upon work at the malaria campaign centres and at the recently established malaria observation stations. The laboratory staff of 3 assistants was attached to the Colombo laboratory and was very fully occupied with the examination and tabulation of the large amount of material forwarded by the field staff, Medical Officers of Health, and others. A much needed extension of the staff of the Division was made during the year. A Medical Officer (Dr. G. F. Bartholomeusz) with special qualifications and training in Parasitology and Entomology was attached to the staff at the end of December, 1935, and nine additional assistants (four field and five laboratory assistants) were appointed in October, 1936. With the development of preventive work under the newly inaugurated Malaria Control Scheme, further observation stations will be necessary and much additional work—including research, routine, teaching, &c.—will be undertaken by the Division. To enable this to be done provision for extension of the existing laboratory accommodation has been made, and plans and specifications of the buildings and equipment required have been prepared. It is hoped that the building extensions will be completed in 1937.

The Medical Entomologist acted as Superintendent, Anti-Malaria Campaigns, in addition to his own duties from June 10 until the end of the year, during the absence of that officer on leave. An account of the work done in this connection is given in Section III. of this report.

Malaria Observation Stations.—A description of the objects and nature of the work at these stations was given in the report for 1935. Thirty-three stations were established in the latter half of 1935; 25 were situated in the epidemic zone; and 8 in the non-epidemic (wet) zone. Most of the stations were associated with the larger rivers.

This work is now regarded as one of the chief lines of research of this Division, and should remain so for a period of some years in order that the data obtained may provide specific information upon both seasonal and annual variations in malaria conditions in the various districts concerned. The results of the investigations in each area are analysed, tabulated, and charted each month immediately the examination of the material is completed; and reports presenting the more important findings and a brief appreciation of the conditions prevailing are sent to all officers concerned. Approximately 50 copies of the report are sent each month to Government Agents, Provincial Surgeons, Medical Officers of Health, Field Medical Officers, and others concerned with malaria or malaria control work.

Malaria Observation Stations.

Summary of Work, July, 1935, to December, 1936.

Stations	No.	Adult Mosquitoes					Larvae.			
		Houses Examined.	Trapping Hours.	Mosquitoes collected and examined.		Mosquitoes dissected (Anopheles).	Mosquitoes infected with Malaria.	Potential breeding Places examined.	Samples taken.	Anopheles larvae collected and examined
				Anopheles.	Culicines.					
Epidemic zone	25	23,216	10,593	30,481	66,232	16,986	125	25,506	779,598	212,711
Non-epidemic zone	8	6,338	3,636	10,000	18,663	6,344	—	9,961	218,980	46,774
Total	33	29,554	14,229	40,481	84,895	23,330	125	35,467	998,578	259,485

It is not possible in this report to consider the results from individual stations. The more important findings in respect of groups of stations only can be included.

A. Epidemic Zone.—

1. *Deduru-oya Area.*—This river waters an extensive tract of country most of which is situated slightly north of the main epidemic zone as defined by Gill (Sessional Paper XXIII. of 1935). Throughout the greater part of its length, it flows through the dry zone area of the North-Western Province where normally malaria is severely endemic. In its upper catchment, however, climatic conditions tend to become more or less intermediate between those of the dry and wet zones, the country undulating or sub-montane, and estates more numerous. The south-eastern section of the upper catchment area was very severely affected in the great epidemic, and post-epidemic spleen rates were of the order of 60 per cent.

Four of the malaria observation stations are situated in the upper catchment area, and one in the lower; the former were opened in August, and the latter in November, 1935.

Adult anophelines were caught or trapped in moderate or considerable numbers throughout every month of the observation period. In the upper catchment area during the year 1936, twelve species of Anopheles were present, the most numerous being *A. culicifacies* (42.5 per cent. of total anopheline catch), *A. hyrcanus* (30.6 per cent.) *A. subpictus* and *A. vagus* (15.8 per cent.). Collections from dwelling and traps with human bait formed 44 per cent. of the anophelines obtained, the remainder being caught in cattle baited traps. *A. culicifacies* showed definite androphilic habits, 78.7 per cent. of the total catch of this species being obtained from dwellings and human baited traps and 21.3 per cent. from cattle traps. This species also formed 75.8 per cent. of all anopheles caught in dwellings. Of the remaining species (chiefly *A. hyrcanus*, *A. subpictus*, and *A. vagus*) 16.4 per cent. were obtained from dwellings and human baited traps and 83.6 per cent. from cattle traps. The highest catches were made in November and December, 1935 and 1936, and January, 1936; *A. culicifacies* was very prevalent in these months and also in July and August, 1936. Infections with malaria parasites were found in 41 of 2,159 mosquitoes dissected. The only species infected was *A. culicifacies*, in which the infection rate for the whole period was 1.7 per cent.; infections were found in every month except in April, September, and November.

In the lower catchment area (one station only, situated near the coast) the vast majority of the anopheline mosquitoes was obtained from dwellings and human baited traps. Cattle baited traps were used only from April onwards, but the

catches throughout were very small due possibly to the fact that a single animal, instead of several, was employed for the purpose. *A. subpictus* and *A. culicifacies* were the predominant species, the latter forming 49.1 per cent. of the total anopheline catch. Infections with malaria parasites occurred in 14 of 1,040 mosquitoes dissected, *A. culicifacies* being the only species infected. The infection rate in the latter species for the year was 1.4 per cent.; infections were found in January, April, July, September (infection rate 3.5 per cent.), and December.

Conditions in the river bed in these areas varied considerably during the year and pool formation was extensive particularly in the months of February and March and July to September. In the main stream (upper catchment) anopheline larvae were not numerous at any time. *A. varuna* was the predominant species present, but *A. culicifacies* larvae occurred in some numbers in September. In the pools in the river bed, breeding was more severe and *A. culicifacies* larvae were prevalent (64.5 per cent. of the total catch) except in February, March, April, and November; larvae of this species were abundant from July to September and in December. In August, an examination of the dead section of this river below the Batalagoda anicut was made. Pool formation was very extensive and heavy breeding occurred both in the reduced main stream and in the pools. *A. culicifacies* was the predominant species in both sites, its larvae in the sand and rock pools forming almost a pure culture. Oiling of the upper catchment sections of this river was carried out by the Sanitary Engineer in September. In the lower catchment, anopheline larvae were prevalent in the main stream from January to August; *A. culicifacies*, *A. subpictus*, and *A. varuna* were predominant, the first named forming 40.7 per cent. of the total larval catch for the year. In the river pools *A. culicifacies* (40.3 per cent.) and *A. subpictus* (34.0 per cent.) were the predominant species, the former being particularly abundant in January, June, and August.

Anopheline breeding in other types of situations in the vicinity of the observation stations was moderate or severe during a large part of the year. These situations included paddy fields, irrigation channels, small streams, pits of various kinds, trenches, drains, pools, quarries, wells, &c.; and a representative selection was examined every month at each station. In the upper catchment area (11,077 larvae examined), *A. varuna* (33.2 per cent.), *A vagus* (24.5 per cent.), and *A. hyrcanus* (17.2 per cent.) were the predominant forms. *A. culicifacies* larvae (7.0 per cent. of total catch) were found throughout the year, but were more prevalent during the period September to November; they occurred chiefly in pits, channels, wells, and quarries. In the lower catchment (15,390 larvae examined), *A. subpictus* (47.8 per cent.), *A. culicifacies* (19.6 per cent.), and *A. barbirostris* (13.2 per cent.) were the commonest species in these sites. *A. culicifacies* larvae occurred throughout the year, and were especially numerous in August, May, and October.

2. *Maha-oya Area.*—Seven observation stations (four in the upper catchment and three in the lower catchment) are associated with this river. The climatic conditions in the area involved are normally intermediate between those of the dry and wet zones. The country is undulating becoming sub-montane in the vicinity of the stations in the upper catchment; and in general is much more intensively cultivated than that in the neighbourhood of the Deduru-oya. Except near the coast the inhabitants of this area suffered very severely during the epidemic of 1934-35.

During the year, 3,059 adult anophelines were collected from the stations in the upper catchment area, and 5,576 from those in the lower catchment. Species distribution was similar in both areas, the predominant forms being *A. vagus* or *A. subpictus* and *A. varuna* which taken together formed from 76 per cent. to 81 per cent. of the total catch. *A. culicifacies* formed only 1.5 per cent. of the catch from the upper catchment stations, and 3.2 per cent. of that from the lower catchment stations. Collections from dwellings and human baited traps found from 5 per cent. (upper catchment) to 10 per cent. (lower catchment) of the anopheline mosquitoes obtained, the rest being caught in cattle baited

traps. From 76 per cent. to 93 per cent. of the *A. culicifacies* catch was obtained from dwellings. In the upper catchment, the largest catches were made in June, August, and November; *A. culicifacies* was at no time abundant and, except in May, was found only in very small numbers. In the lower catchment stations, the largest catches were made in August and October; *A. culicifacies* occurred with greater frequency than in the upper catchment, but was not present in large numbers—nearly half the total catch of this species was obtained in May and June. Infections with malaria parasites were seen in 35 of 4,978 mosquitoes dissected. *A. culicifacies* only was found infected, the infection rates in this species for the year being 69.5 per cent. in the upper catchment area, and 3.2 per cent. in the lower catchment area. In the former area, the total catch of *A. culicifacies* was only 46, of which 32 were infected; of these, 35 were collected in April, May, and June and 24 were infected. Infections in the upper catchment stations also occurred in July, October, November, and December; and in the lower catchment in May, June, and December.

The bed of this river presents much variation, and is frequently rock bound even in its lower reaches. Rocks occur in the sections selected for examinations at five of the seven observation stations associated with this river. Pool formation is apt to be more extensive and regular than in the sandy stretches, and usually reaches its maximum in the drier periods (February to April and August to September) preceding the onset of the monsoons. Anopheline breeding in the main body of water was of relatively low or moderate intensity throughout the greater part of the year. In both catchments, however, a great increase in larval prevalence occurred in September, and in the upper catchment in June also. In the latter area the number of larvae obtained in these two months formed nearly 80 per cent. of the total catch for the year. *A. varuna* was the predominant species and formed 96 per cent. of the total catch. *A. culicifacies* larvae were rarely found in the main stream but in the upper catchment showed increased prevalence in September. Species distribution in the pools in the river bed varied considerably in the two areas and was also markedly different from that in the main stream. In the upper reaches *A. culicifacies* (54.5 per cent.), *A. vagus* (21.9 per cent.), and *A. varuna* (16.7 per cent.) were the chief species; and in the lower reaches *A. varuna* (68.2 per cent.), *A. vagus* (18.9 per cent.), and *A. culicifacies* (8.8 per cent.). The difference in the relative prevalence of *A. culicifacies* larvae in the river pools in the two areas is noteworthy. This species, in the upper reaches, was particularly abundant in April, September, and October, and in the lower reaches showed increased prevalence in April and June.

Anopheline breeding in situations other than the river bed was relatively severe throughout the year in both areas. Species distribution showed no important differences, the predominant mosquitoes (39,485 larvae examined) being *A. varuna*, *A. hyrcanus*, and *A. vagus*. These three species together formed from 72 to 76 per cent. of the total laval catch. *A. culicifacies* larvae were scanty in both areas, but were slightly more prevalent in breeding places of the types involved in the upper catchment stations (1.7 per cent. of year's catch, against 0.7 per cent. in the lower catchment).

3. *Mahaweli-ganga Area.*—The four observation stations in this area are associated with a portion of the western catchment of this large river. They are situated in the neighbourhood of Kandy—two being close to this town, and the others from 6 to 9 miles eastwards—in an estate district, and at an elevation of approximately 1,600 ft. In normal years malaria is not severely endemic in this area, although the incidence of the disease is usually higher in the two more easterly stations. Epidemic conditions, however, prevailed in 1935, the out-break commencing about a month after the onset of the epidemic in the sub-montane and lowland districts.

During the year, 6,928 adult anopheline mosquitoes were collected from dwellings and traps. Thirteen species were represented, of which the commonest were *A. hyrcanus* (45.7 per cent. of total catch), *A. vagus* (35 per cent.), *A. subpictus* (5.4 per cent.), *A. culicifacies* (5.2 per cent.), and *A. varuna* and *A. aconitus* (5.1 per cent.). *A. maculatus* was found only in small numbers, and formed 0.8 per

cent. of the year's catch. Anophelines were at no time numerous in dwellings or human baited traps and the vast majority (93.2 per cent.) of the catch was obtained from cattle baited traps. *A. culicifacies*, however, occurred almost entirely (94.2 per cent. of specimens found) in dwellings—chiefly in the two eastern stations (Teldeniya and Haragama). A total of 3,021 mosquitoes was dissected, and malaria parasites were found in 23. With one exception all the infected mosquitoes were *A. culicifacies*, the infection rate in this species being 8.5 per cent.; infections occurred in January to March, May to July (infection rate July 22.2 per cent.), October, and December. A single female of *A. hyrcanus* caught in a cattle baited trap at Katugastota in March showed oöcysts in the gut; the infection rate for this species for the year was 0.06 per cent.

Three of the stations in this area are situated on the banks of the Mahaweliganga; the remaining station (Teldeniya) is situated on a major tributary—the Hulu-ganga. Rock formation is present at three stations and at Haragama is very extensive. Anopheline larvae were at no time numerous in the main body of water, and of those obtained 81.1 per cent. were *A. varuna; A. culicifacies* larvae were rarely found. Pool formation was usually extensive and was definitely reduced only during the south-west monsoon period—May to July. Anopheline breeding in the pools occurred throughout the year, the predominant species being *A. vagus* (60 per cent. of catch). *A. culicifacies*, however, formed a relatively high proportion (13.5 per cent.) of the catch, and was prevalent in the pools, particularly at Teldeniya and Haragama in July.

The examination each month of all types of potential breeding places of anophelines other than the river bed yielded 28,399 larvae. *A. varuna* and *A. aconitus* (together 34.4 per cent. of total catch). *A. vagus* (28.8 per cent.) and *A. hyrcanus* (24.9 per cent.) were the predominant species. *A. maculatus* formed only 6.1 per cent. and *A. culicifacies* 2.7 per cent. of the larvae collected. Larvae of both these species were found throughout the year, usually in relatively small numbers; the former was most prevalent in June, the latter in July and August.

4. *Kelani-ganga Area.*—Nine observation stations were included in this area—five in the upper catchment and four in the lower catchment. One station situated approximately 30 miles north-east of Colombo on the Attanagala-oya, has been included in the lower catchment area. Most of the country in the catchment of the Kelani-ganga is thickly populated and extensively cultivated; it is situated in the northern part of the wet-zone. In its upper reaches it is sub-montane in character with numerous estates. Many parts of this tract of country were severely affected by the great epidemic, although less intensely than the more northerly districts in the catchment of the Maha-oya.

The anopheline catch from dwellings and traps at the various stations during the year amounted to 6,950 mosquitoes. Of these, 4,137 were obtained from the upper catchment stations and 2,813 from the lower catchment stations. The chief differences between the catches from this area and the Maha-oya stations was (*a*) reduced prevalence of *A. culicifacies* and (*b*) increased prevalence of *A. jamesi*. Species distribution was as follows:—upper catchment, *A. hyrcanus* (32.5 per cent.), *A. vagus* and *A. subpictus* (29.2 per cent.), *A. jamesi* (23.1 per cent.), *A. culicifacies* (0.3 per cent.), *A. varuna* and *A. aconitus* (6.7 per cent.), other species, 8.2 per cent.; lower catchment, *A. jamesi* (36 per cent.), *A. vagus* and *A. subpictus* (0.8 per cent.), *A. varuna* and *A. aconitus* (2.8 per cent.), other species, 8 per cent. In both areas the majority of the specimens of *A. culicifacies* was caught in January. A total of 4,300 mosquitoes was dissected, and a single female of *A. culicifacies* from Attanagala was found infected with malaria parasites in January, 1936.

Pool formation in the lower reaches of the Kelani-ganga was very slight during the year and occurred only during the months of January to May, in the upper, more rocky stretches of the river pools were present throughout, but were in moderate numbers only during January to April and in September. Larvae were at no time numerous in the main body of water of the Kelani-ganga, but were prevalent in that of the Atanagala-oya, in March, May, July, and September. *A. varuna* larvae greatly predominant in the main stream in both areas. *A. culicifacies* larvae were always scanty, but were more frequently found in the upper reaches. Species distribution in the year's catch from pools in the river bed

differed considerably in the two areas. In the upper reaches *A. vagus* (30.9 per cent.), *A. varuna* (16.7 per cent.), *A. culicifacies* (16.5 per cent.), and *A. barbirostris* (11.6 per cent.) were predominant. In the lower reaches *A. culicifacies* (3.5 per cent.) was less prevalent, the predominant species being *A. varuna* (46.2 per cent.) and *A. vagus* (42.6 per cent.). In the upper catchment, however, *A. culicifacies* larvae were found only in the months of January, March, April, and June.

The examination of other types of potential breeding places of anophelines at these stations gave the following results for the year's catch:—upper catchment area (18,335 larvae examined)—*A. hyrcanus* (29.2 per cent.), *A. varuna* (25.3 per cent.), *A. jamesi* (17.6 per cent.), *A. vagus* (10.2 per cent.), *A. barbirostris* (5.7 per cent.), *A. culicifacies* (2.1 per cent.), and other species together (9.9 per cent.); lower catchment (21,103 larvae examined), *A. hyrcanus* (34.2 per cent.), *A. barbirostris* (23.4 per cent.), *A. jamesi* (20.8 per cent.), *A. varuna* (11.5 per cent.), *A. vagus* (7.4 per cent.), other species (2.7 per cent.). *A. culicifacies* was found very rarely in the lower catchment area and found only 0.1 per cent. of the year's catch. In the upper catchment the majority of the larvae of *A. culicifacies* were obtained in January and March from pools in stream beds.

B. *Non-Epidemic Zone.*—

The eight observation centres included in this zone are situated in the wet south-western lowlands of Ceylon. One group of four stations is associated with the Kalu-ganga and is situated in the south-central portion of the Western Province; the other group is associated with the Gin-ganga and is situated in the western part of the Southern Province. Malaria endemicity in both areas is normally low, ths spleen rates in children being of the order of 0—5 per cent.

Adult Anopheline mosquitoes were extremely scanty in dwellings and human baited traps throughout the whole period (18 months) of observation. They were, however, prevalent or very prevalent in cattle-baited traps, more particularly in the Southern Province group of stations during the latter half of 1936. The largest catches in both groups of stations were made in September and October. Several species of Anopheles were found, but *A. jamesi* and *A. hyrcanus* predominated throughout, forming 85.0 per cent. of the total catch in the Kalu-ganga area, and 85.8 per cent. in the Gin-ganga area. In all, 10,000 anopheles mosquitoes were collected and over 6,000 dissected, but no infections with malaria parasites were seen. The rivers in these districts receive a plentiful supply of rain and, at least in the areas under observation, rarely allow of pool formation. Except when in flood, breeding occurred in these rivers during every month of the observation period, but anopheline larvae were always extremely scanty. The species most often found included *A. jamesi*, *A. hyrcanus*, and *A. barbirostris*. In the village ground water collections anopheline larvae were much more prevalent, and in both areas were more especially abundant in September and October, 1935, and from December, 1935, to March, 1936; in the Kalu-ganga area increased larval prevalence again occurred in August and September, 1936. The larvae of *A. jamesi*, *A. hyrcanus*, and *A. barbirostris* preponderated to an overwhelming extent. These three species taken together formed from 82.4 per cent. to 98.6 per cent. of all larvae collected from the Kalu-ganga area, and (except in April, 1936, when the proportion dropped to 71.4 per cent.) from 86.1 per cent. to 96.6 per cent. in the Gin-ganga area.

A. culicifacies was extremely rare in both areas. A single larva was obtained from a stream in the Kalu-ganga area in September, 1936; and two adults and five larvae from three stations in the southern group in September, October, and December, 1935, and in April and June, 1936. The adults occurred in dwellings, and the larvae in streams, paddy fields, and unbuilt wells.

The observation stations in this zone are associated mainly with the lower catchments of the two rivers mentioned above. It is proposed, however, to extend the work to the upper catchments as soon as circumstances allow.

Mosquito Surveys.—During the year surveys of particular areas were made at Trincomalee (China Bay), Mandapam Camp (South India), Matara, and Ratmalana and reports on the findings submitted.

The survey of China Bay was undertaken at the request of the Naval authorities and was carried out in January and early February after cessation of the heavy rains of the north-east monsoon. The area involved consisted of lowlying coastal lands and adjoining undulating lands covered with dense scrub jungle. Survey work in the latter was difficult and complete exploration impracticable, but all ravines and the lower slopes of the hills were carefully examined for potential breeding places of anopheline mosquitoes. At the time of the survey the area was sparsely populated, but adult anophelines were plentiful in most of the dwellings examined. *A. culicifacies* formed 95.0 per cent. of the mosquitoes collected and gave an infection rate of 7.8 per cent. (sporozoite rate 3.6 per cent.). No species other than *A. culicifacies* was found infected. Approximately 150 potential breeding places of anopheles were discovered and examined, and a total of 6,162 larvae collected and identified. Sixty-seven per cent. of the situations examined contained anopheles larvae, and 61.7 per cent. larvae of *A. culicifacies*. The latter was the predominant species, its larvae forming 62.6 per cent. of all those identified. Other species found included *A. jamesi* vel *annularis* (14.3 per cent.), *A. barbirostris* (8.8 per cent.), and *A. varuna* (6.1 per cent.). *A. culicifacies* was breeding in a high proportion of all types of situations examined, viz., streams, drains, pools, borrow pits, quarries, seepage areas, and wells. The report submitted included a map and register showing the positions and nature of the various breeding places, and recommendations for control measures.

The survey of Mandapam Camp was of a preliminary nature only, since the dry season was well advanced (May) at the time the work was done. Potential breeding places were much reduced in numbers, and consisted almost entirely of wells and water storage tanks. *A. culicifacies* was breeding in several of the wells, and arrangements were made to stock these with larvivorous fish. The survey work at the camp will be continued at the end of the next wet season.

Investigations were carried out in the neighbourhood of Matara following an outbreak of malaria in May and June. The area affected was of considerable extent and embraced the greater part of what may be termed the southern intermediate climatic zone. In this area the endemicity of malaria is normally low in the west, but rises rapidly in the drier eastern section adjoining the dry-zone proper. *A. culicifacies* was the only species found infected with malaria parasites, and was definitely more prevalent in the eastern and north-eastern parts of the district than elsewhere. Its breeding places were also more prevalent and of greater variety in the latter areas. The belief that the recent outbreak of malaria was due to the introduction of human carriers from neighbouring malarious districts, is not considered sufficiently comprehensive. Travelling facilities for some years past have been such that the introduction of infected persons into the area can be no new development; but prior to this outbreak it had not produced any marked change in malaria incidence. It is considered more probable that the chief factor involved was one associated with the mosquito carrier *A. culicifacies*. But at present there is no definite evidence of this, and the true explanation can only be determined by careful study over a prolonged period. The establishment of a series of malaria observation stations in this area in the near future will enable the various epidemiological factors present to be more clearly appreciated.

The survey of the railway area at Ratmalana was undertaken in July. This area is situated ten miles south of Colombo where normally the endemicity of malaria is very low. Cases of malaria among the railway staff had occurred, and it appeared probable that the infections had been contracted at the station. All ground water collections existing at the time of the survey were examined and the larvae identified. Six species of anopheles were breeding in the area. *A. culicifacies* was present, but was confined to pits which had been cut to store water for the purpose of seasoning cement bricks. Control measures were recommended.

Several other requests for mosquito surveys were received during the year from Government departments and Urban District Councils. Unfortunately they could not be conceded owing to lack of trained staff.

Malaria Campaigns.—The Medical Entomologist continued to serve as a member of the Malaria Committee, the body responsible for the control and administration

of the various malaria campaigns. Considerable time was given to this work, and several tours of inspection were made to the campaign centres. Reports on the individual campaigns were sent to the Committee after each inspection.

Entomological work at these centres was continued on the same lines as in previous years. A trained field assistant was attached to each campaign under the Medical Officer of Health in charge of the centre. This assistant undertook investigations specified by the officer in charge, and also carried out routine examinations in respect of (*a*) anopheline prevalence (adult and larval) at selected catching and dipping stations, (*b*) the presence of *A. culicifacies* larvae in untreated situations, and (*c*) the presence of *anopheles* larvae in treated situations (efficiency checking). In most of the campaign centres the field (entomological) assistant was also in charge of the work of controlling the breeding of anopheles in wells by means of larvivorous fish (*Lebestes reticulatus*).

Mosquito prevalence in Hospitals.—Arrangements were made for work in this connection (see report for 1935) to be continued at 20 selected hospitals during 1936. The response was not very gratifying as only 5 hospitals sent in regular collections of mosquitoes. Eleven hospitals, however, forwarded collections made during a period of six months or over. From these a total of 23,847 mosquitoes was received and examined; 4,848 or 20.2 per cent. were anophelines. The proportion of anophelines in the catches from different hospitals varied considerably, the minimum catch (Watawala) being 1.1 per cent. and the maximum (Tissamaharama) 45.8 per cent. Anophelines formed over 8.0 per cent. of the catch in four hospitals only—Kurunegala (12.1 per cent.), Batticaloa (25.2 per cent.), Kaltota (26.1 per cent.), and Tissamaharama (45.8 per cent.). Fifteen species of anopheles were represented, the predominant ones being *A. subpictus* (72.1 per cent. of the total anopheline catch), *A. hyrcanus* (12.0 per cent.), *A. culicifacies* (3.9 per cent.), and *A. varuna* (3.3 per cent.). Other species found were *A. vagus*, *A. maculatus*, *A. tessellatus*, *A. barbirostris*, *A. aconitus*, *A. pallidus*, *A. jamesi*, *A. annularis*, *A. karwari*, *A. aitkeni*, and *A. pseudo-barbirostris* (2 specimens). The overwhelming predominance of *A. subpictus* was almost entirely due to the large catches of this species made at the hospitals at Tissamaharama and Batticaloa. *A. culicifacies* was obtained, usually in small numbers, from six hospitals, viz., Tissamaharama, Kaltota, Badulla, Batticaloa, Kurunegala, and Anamaduwa. The majority (79.0 per cent.) of the specimens of *A. culicifacies* were caught in Kaltota hospital where the species appeared to be most prevalent during the months of March, April, and May. Of the culicine mosquitoes, species of *Mansonia* (carriers of filariasis) were very prevalent in the hospitals at Tissamaharama, Watawala, and Anamaduwa, where they formed from 78.5 to 92.0 per cent. of the total culicine catch.

Filariasis.—The discovery of *F. malayi*, Brug in Ceylon, and of the infection of the three indigenous species of *Mansonia* (*M. annulifera*, *M. uniformis*, and *M. indiana*) with microfilariae which were apparently identical in form and structure with those described by Brug for *F. malayi*, was dealt with in some detail in my report for the year 1932. As a result of this work it was considered that at least two species of human filaria—*F. bancrofti* and *F. malayi*—occurred in Ceylon, and that in all probability the species responsible for filariasis in the rural districts was *F. malayi*. It was recognized that this was a matter of considerable importance from the public health point of view since preventive measures directed against *F. malayi* would necessarily be radically different in nature from those directed against *F. bancrofti*.

The contemplated early extension of research on this subject was unfortunately interrupted by the great malaria epidemic, but has recently been commenced in collaboration with the Medical Officer of Health, North-Western Province (Dr. W. L. P. Dassanayake). This officer has already completed a detailed survey of the Kurunegala District, and a large amount of parasitological work associated with the survey has been done in this laboratory. So far, all parasites found in the blood films examined have conformed strictly with the descriptions of *Microfilaria malayi* given by Brug. Further parasitological and entomological studies

in the field and in the laboratory are, however, necessary before any definite conclusions can be reached. But it is hoped that a comprehensive report on filariasis in this province will be available before the end of the year.

Sand-Flies (*Phlebotomus*).—Sand-flies are prevalent in many districts in Ceylon, and there is some evidence indicating the existence of " sand-fly " fever. This disease, however, has not yet been officially recognized, and it is probable that cases occurring in rural districts are recorded as malaria. Collections of these flies have been made in the vicinity of Colombo, and specimens are frequently obtained in the course of the work at the Malaria Observation Stations. Sand-flies are known to occur in the Western Province, Sabaragamuwa, Central Province, and in the moister parts of the Southern and North-Western Provinces and the hill country of Province of Uva (up to 4,000 feet). They have not yet been recorded from the dry-zone areas of the North-Central, Northern, and Eastern Provinces.

Four species of *Phlebotomus* have now been identified from Ceylon through the kindness of Professor P. A. Buxton of the London School of Hygiene and Tropical Medicine. These are—*P. arboris*, Sinton, *P. argentipes*, Ann. and Brun., *P. babu*, Ann., and *P. zeylanicus*, Ann. An additional species provisionally identified as *P. sylvestris*, Sinton has also recently been found. From the material at present available *P. argentipes* would appear to be the most prevalent and widely distributed of the species recorded.

Biting Midges (*Ceratopogoninae*).—In my report for 1929 (*vide* Administration Report of the Director of Medical and Sanitary Services, 1930, p. C 65) attention was drawn to the existence in Ceylon of the minute black, and viciously biting, midge *Lasiohelea stimulans*, Meij., and to the widespread belief that this species was a form of the " Eye-fly " (*Siphunculina*). Indeed in many districts—particularly planting districts—where the midge is prevalent, this belief is so strong that it has invested the " Eye-fly " with a reputation far more sinister than it actually deserves. The true " Eye-fly " is not a blood-sucking insect, but superficially is so similar in appearance to *Lasiohelea* that the confusion which has arisen is not surprising. Both flies are very small black insects which in many localities occur together during the day time, and pester man and animals with their attentions. But though superficially alike they are entirely unrelated, and differ greatly in structure both in the adult and early stages. Several species of *Lasiohelea* have been recorded from different parts of the world, but at present nothing is known of their life-histories and breeding habits. The Sinhalese villagers in some areas appear to differentiate *Lasiohelea* from the " Eye-fly ", and to associate it with the plant known in the vernacular as " Ketala " (*Lagenandra ovata*, Thw.); in such areas the midge is known as " Ketala massa " (lit: Ketala-fly).

Observations on *Lasiohelea* were undertaken during the year whenever time and opportunity permitted. So far one species only—*L. stimulans*—has been identified. Its recorded distribution at present involves the moist south-western lowlands from the Maha-oya in the north to Matara in the south (southern part of North-Western Province, the Western Province, and western part of Southern Province), and the hill-country up to an elevation of approximately 3,000 ft. (Central and Uva Provinces). No specimens have yet been received from the dry-zone areas. Search for larvae has been carried out in a variety of situations in localities and at periods when the midges were numerous; and endeavour has been made to obtain eggs from captive females. No success has, however, yet been attained.

Horse-flies and Clegs (*Tabanidae*).—These flies are serious cattle pests in many parts of Ceylon. They have been found in different parts of the Island throughout the year, but in the dry-zone jungle areas are particularly prevalent from October to December (north-east monsoon) when they often attack man. Collections of material and observations on the Ceylon species have been made whenever time and opportunity permitted. The following species have been

identified through the kindness of Sir Guy A. K. Marshall of the Imperial Institute of Entomology :—

Chrysops dispar, Fabr., *C. fasciata*, Wied., *Haematopota brevis*, Ric., *H. singalensis*, Ric., *H. unizonata*, Ric., *Neotabanus ceylonicus*, Ric., *Tabanus discrepans*, Ric., *T. fuscicauda*, Ric., *T. jucundus*, Walk., *T. puteus*, Ric., *T. rubidus*, Wied., *T. speciosus*, Ric., *T. tenens*, Walk., and *T. virgo*, Wied.

There are also several other species in our collections which have not yet been identified, and recently a specimen of *Gastroxides ornatus* was reared in the laboratory.

The breeding places of these flies show considerable variation in Ceylon. Egg masses have been found attached to leaves of trees and shrubs in the vicinity of water. The larvae are terrestrial or semi-aquatic, and occur in the damp soil or mud in or near the water. They are often difficult to find owing to their carnivorous and wandering habits; and usually they are obtained singly or in small numbers only after prolonged search. The situations from which they have been collected include (*a*) the margins of muddy pools, (*b*) the margins of swamps, (*c*) the bunds separating rice fields, (*d*) the margins and bunds of tanks, (*e*) the banks and sandy beds of streams, and (*f*) a tree-hole filled with earth. Occasionally the larvae have been found swimming vigorously in the water, but more frequently they have occurred buried (three to eight inches deep) in moist or wet earth at distances of a few inches to twelve feet from the water.

Endeavour was made to rear some of the Tabanid larvae in the laboratory. Specimens were isolated in glass dishes containing damp earth and were fed upon house-fly larvae. A number of adults of different species (as yet unidentified) ultimately hatched, the period from the date of collection to the date of hatching varying from 4 to 64 days, with an average of 47 days.

In October, 1936, several Tabanid egg-masses were collected from the leaves of *Jussiaea suffructicosa*, L., which were overhanging a small pool near the laboratory in Colombo. Some of these egg masses were largely or completely destroyed by a small Hymenopteron (*Phanurus* sp. incert.); three others which appeared intact produced 463 larvae, 138 larvae, and 66 larvae respectively. Many of the latter were placed in containers and fed with house-fly larvae; the majority disappeared but a few developed and two males (*Tabanus* sp. incert.) emerged on 27/12/36 and 2/1/37. The lengths of the different stages were—eggs, hatched in from 1 to 4 days after collection, larvae 71 days, pupae 8 to 14 days. In the case of the largest egg mass mentioned above hatching commenced at 6 P.M. on October 6, 1936, and continued till 8.30 A.M. on October 8, 1936; hatching was observed to be proceeding with great vigour at 11 P.M. on October 6, 1936, when a more or less continuous " rain " of larvae fell from the egg mass to the water containing receptacle below. The newly hatched larvae underwent their first moult within a few hours of reaching the water and before they had fed. This observation does not agree with that of Marchand (Monograph No. 13, Rockefeller Institute for Medical Research, 1920, p. 155) who, when working on the biology of the Tabanidae, stated that in the case of *T. striatus* (*tenens*) the first moult occurred from the 7th to 10th day of larval life when the larva was from 4 to 6.5 mm. in length. It seems probable that he overlooked the initial moult.

The specimen of *Gastroxides ornatus* previously noted was bred from a larva found (October 1, 1936) in a hole in a mango tree. This hole was about 9 inches deep and was filled with earth; the lower layers of earth were in a very moist or wet condition. This larva pupated on December 27, 1936, and an imago (female) appeared on January 2, 1937. Two other larvae obtained at the same time from this tree-hole are still living.

Rat-Flea Surveys.—The identification of rat-fleas collected in the course of surveys carried out by Medical Officers of Health was continued. In the course of the year 1,639 rat-fleas were received at the laboratory; these were submitted by Medical Officers of Health from Weligama, Ambalangoda, and Galle (Southern Province), Hatton and Maskeliya (Central Province), Kurunegala (North-Western Province), and Anuradhapura (North-Central Province).

Summaries of the results from each of these towns are given in the table below:—

Rat-Flea Surveys.

Town.	Date of Survey (1936).	No. of Premises.	No. of Rats.	No. of Fleas.	Gross Flea Index.	*X. cheopis* Index.
Ambalangoda	August	67	164	489	2·98	—
Weligama	April	7	21	83	3·95	0·14
Galle	November and December	22	40	168	4·20	0·02
Hatton	May and June	12	38	185	4·87	4·42
Maskeliya	July and August	7	25	132	5·28	5·12
Kurunegala	November and December	70	145	438	3·02	0·73
Anuradhapura	May to December	23	42	144	3·43	0·52

Ambalangoda.—The fleas present in this collection were, with the exception of a single female of *Ctenacephaloides canis*, all *Xenopsylla astia.*

Weligama.—The number of fleas submitted was too small to afford reliable results. *X. astia* formed 96.4 per cent. of the fleas present.

Galle.—The survey of this town is being carried out by the Municipal authorities; it was commenced only at the end of the year and is still in progress.

Hatton.—The collection of fleas was made during the plague epidemic and from rats captured in the plague-infected area. *X. cheopis*, the " plague flea " formed 91.2 per cent. of the collection, and gave the abnormally high index of 4.42. Other species of fleas present were *X. braziliensis*, *X. astia*, and *Leptopsylla segnis.*

Maskeliya.—This collection was also made from a plague-infected area. *X. cheopis* formed nearly 98 per cent. of the fleas present, and gave an index of 5.12—the highest index for this species yet recorded from Ceylon.

Kurunegala.—The results obtained from this survey indicate a considerable reduction in the prevalence of *X. cheopis.* Previous records by Hirst for April, 1930, and September, 1931, gave specific indexes of 1.94 and 2.51 respectively. During the plague epidemic in 1932 the examination of 777 rat-fleas gave an *X. cheopis* index of 2.46 and a gross flea index of 5.80. The reduction in both these indexes and of the percentage of *X. cheopis* (from 42.5 in 1932 to 24.2 in 1936) may be regarded as satisfactory, but should not be considered sufficient grounds for slackening preventive measures.

Anuradhapura.—The number of rat-fleas fowarded for indentification during the period of collection (May to December) was unfortunately too small to allow of true comparison with the results obtained for previous years. The relatively low *X. cheopis* index and percentage (0.52 and 15.3 respectively), revealed by the identification results are, however, suggestive of more satisfactory conditions. Previous results from this town were as follows:—

Date of Survey.	No. of Fleas.	Gross Flea Index.	*X. cheopis* Index.	*X. cheopis* Per Cent.
August, 1931 (Hirst)	322	2·48	1·17	47·4
November 1932-December, 1933	2,328	4·52	2·18	48·3
January-December, 1934	3,213	3·02	1·69	56·1
January-June, 1935	803	2·53	1·65	65·0

Cases of plague occurred at Anuradhapura in March, 1936.

Beetles (Coleoptera): '(*a*) *Blister Beetles* (*Paederus spp.*)—Attention was drawn in my report for the year 1929 to the association of small Staphylinid beetles of the genus *Paederus* with occasional outbreaks of blistering in the moist lowlands of Ceylon. At that date no information on the bionomics of these beetles was available, but recently Isaac working with *P. fuscipes* in Northern India has shown that this species breeds in damp, porous, soil near water. This author states that breeding is retarded during the winter and the monsoon months, and that the beetle only becomes a pest in the early summer in years when the rainfall during March to May is deficient.

Ten different species of *Paederus* have now been recorded from Ceylon, but at present only two are known to be capable of causing vesication. *P. alternans* appears to be the species most commonly associated with blistering in the moist lowlands where at times it occurs in some abundance and at night invades dwellings—particularly those which are brightly lighted. The attraction of these beetles to dwellings is due to the artificial lights and not to man himself; and the blistering is produced by accidental contact of the beetle with the skin. The distribution of *P. alternans* in Ceylon is not yet fully determined; but specimens have been received from many parts of the moist south-western lowlands, from the hill-country up to 4,000 feet elevation, and from a few localities in the dry-zone. In the Colombo District adults of this species have been found moving actively in and upon damp soil or mud in the vicinity of water—near pools, drains, burrow pits, rice-fields, &c. In such places they were numerous from the commencement of the observation period (July) until November and December, when the rains of the north-east monsoon caused flushing or flooding. Larvae were less easily discovered, as they were inconspicuous and remained mostly in cracks and crevices beneath the surface of the ground; they crawled rapidly about in search of food. In the laboratory, larvae fed upon dead insects or portions of insects pupated in a minimum period of 8 or 9 days and reached the adult stage in a further 4 or 5 days.

Further observations of the life-histories and habits of these beetles will be made, but at present there appears little possibility of introducing any feasible method of control in respect of their breeding places.

(*b*) *Onthophagus bifasciatus, Fabr.*—A case of infestation with this beetle was recorded during the year. The patient, a girl of four years of age, lived at Ambalangoda and it was stated that she had passed beetles over a period of two years—at first irregularly and in small numbers, but at the time of examination, daily and in larger numbers (25-30 per day). She complained of pain in the lower part of the abdomen, lack of appetite, and desire for charcoal and raw rice as food. The Medical Officer of Health of the district stated that he had two similar cases under observation.

Cases of infestation with this beetle among children in Ceylon are by no means infrequent, and in some localities the condition is sufficiently common to be recognized under the name Kurumini Mandama (Sin. " beetle-disease "). Records are from Matara, Godakawela, Kurunegala, Matale, Jaffna, Mihintale, and Anuradhapura where beetles were found in the lower intestine on post-mortem.

The method of invasion is still obscure, although various suggestions as to the mode of entrance have been made.

Ixodoidea: Ticks.—In 1925 Warburton (Spolia Zeylanica, XIII. p. 255) recorded sixteen species of ticks from Ceylon, and drew attention to the fact that no *Argasidae* or members of the genera *Ixodes* or *Hyalomma* were present in the material comprising the Colombo Museum collection. Recently Dr. M. Shariff of Cambridge has examined further material collected by Mr. W. W. A. Phillips and members of the staff of this laboratory, and has reported the occurrence of three additional species and a new species of *Ixodes*. The ticks (20 species) referred to above are all " hard " ticks or Ixodidae and are referable to the genera *Haemaphysalis* (7 species), *Rhipicephalus* (2), *Dermacentor* (1), *Boophilus* (2), *Ixodes* (1), *Amblyomma* (4), and *Aponomma* (3). They are mainly parasitic on domesticated and wild mammals, and on reptiles, but certain species particularly in the larval and early nymphal stages (" seed-ticks ") attack man when opportunity offers. In the dry-zone jungle districts of Ceylon, larval ticks are often a source of great annoyance to villagers and others whose work involves contact with the undergrowth; the larvae then leave the plants upon which they are resting and attach themselves to the legs and other parts of the body.

Although no " soft " ticks or Argaside were present in the collections mentioned above, two species have now been found in Ceylon. These species are *Argas persicus*, the so-called " fowl " tick, and *Ornithodoros savignyi*. The former was originally (1927) obtained from houses of diseased fowls at Diyatalawa (4,200 feet), and specimens were sent to the Veterinary Department for identification. These fowls had been imported from the Batticaloa District (Eastern Province), and

subsequently the Government Veterinary Surgeon (Mr. M. Crawford) found the tick commonly present in fowl houses in several localities in this district. The discovery of *O. savignyi* in the Jaffna peninsula (Point Pedro), by an officer (Mr. Sittamparampillai) of the Veterinary Department, is of considerable interest as this species is one of the carriers of African Relapsing Fever. It is said to inhabit sandy places and to bite both man and cattle freely. Investigations on the distribution and habits of this tick will be commenced shortly.

Teaching.—Lectures and demonstrations (field and laboratory) on Medical Entomology with special reference to Ceylon conditions were given during the year to training classes for Field Medical Officers, Sanitary Inspectors, and Field and Laboratory Assistants. Upwards of 70 lectures and demonstrations were given, and in addition a malaria field worker was trained for the Mahavilla Estate group at the request of Dr. J. E. Measham of the Ross Institute of Tropical Hygiene.

In the past, teaching has not been a recognized function of this Division, and the demands for an extension of this work during the year were met with considerable difficulty owing to lack of the necessary facilities at the laboratory. The extension in respect of accommodation, staff, and equipment referred to above have, so far as was possible included provision for teaching, and when completed should enable limited classes of from 20-25 students to receive instruction.

(6) PUBLICATIONS.

A.—The following papers were published during the year:—

Chanmugam, P. K.: Note on an unusual ophthalmic artery associated with other abnormalities. J. Anat. Lond. LXX., July, 1936.

Ellison, F. O. B.: Malaria epidemics and sunspot cycles—Trans. Soc. Trop. Med. Hyg. Lond., Vol. XXIX., No. 6.

Hill, W. C. O.: Two examples of infantilism—*Ceylon J. Sci.* (D) IV., Pt. I., Aug., 1936.

Nicholls, Lucius: A nutritional survey of the poorer classes in Ceylon—*Ibid.*

Karunaratne, W. A. E.: (1) Carbon Tetrachloride Cirrhosis in relation to liver regeneration (with G. R. Cameron). *J. Path. Bact.* XLII., No. 1 ,1936; (2) The Pathology of Rhinosporidiosis—*Ibid.*

Paul, M. A.: Surgical measures in Leprosy—*Int. J. Leprosy*, 1936.

B.—The following publications by officers of the department appeared in the Journal of the Ceylon Branch of the British Medical Association for 1936:—

Blaze, J. R.: Nervous Diseases in Ceylon.
Fernando, P. B.: A note on the rectal administration of quinine.
Fernando, S. E.: Notes on a case of Intraorbital Endothelioma.
Gunawardena, H. C. P.: Tetanus.
Jayasuriya, J. H. F.: A case of cerebral tumour.
Kunaratnam, I. T.: Notes on a case of Volvulus complicating Pregnancy.
Leanage, D. T. J.: The incidence of Syphilis.
Paul, Milroy: Neuro fibromas of large nerves.
Ponnambalam, C.: Notes on Eleven Cases of Poisoning with " Nachukai ".
Senanayake, I. A.: Balantidial Dysentery.
Sinnatamby, G. S.: Treatment of enlarged prostate in the very aged.
Wickremasinghe, S. F.: Observations regarding the uses of Atebrin and Quinine in the treatment of malaria.
Wijerama, E. M.: Notes on two cases of interesting tropical diseases.

X.—MISCELLANEOUS.

(1) MEDICAL EDUCATION.

The Ceylon Medical College was established in 1870. In 1888 recognition was granted by the General Medical Council of the United Kingdom and the diploma became registrable in Great Britain and all parts of the Empire.

In 1924, the complete extended curriculum of one year's pre-medical study (chemistry, physics, botany, and zoology) which is followed at the University College, and a five years' course in the Medical College was adopted. At the end of the course, the diploma in Medicine, Surgery, and Midwifery is conferred under the designation of L.M.S. (Ceylon).

The College also provides a two years' course of instruction for apothecary students.

The following relevant extracts are taken from the report of the Registrar, Ceylon Medical College, for the year 1936:—

Dr. N. Sinnadurai, who had been undergoing courses of taining in Europe under Prof. Sydney Smith and in the Egyptian Government Medico-Legal Department, returned in September, 1935, and was appointed permanent Judicial Medical Officer to the Ceylon Government. He was appointed lecturer in Forensic Medicine to the College from October 1, 1935. Pending the provision of a permanent laboratory he was given the use for the time being of one of the small laboratories in the Physiological Department of the Medical College.

Dr. W. A. E. Karunaratne returned from a period of training in the Pathological Laboratories of University College, London, and assumed duties as Professor of Pathology in January, 1936.

Dr. R. L. Spittel retired from the post of Second Surgeon, General Hospital, before the beginning of the year. The Junior Ward Classes in Surgery were given to Dr. V. Gabriel and the lectures in Dermatology to Dr. D. J. T. Leanage from October 1.

In March Dr. P. K. Chanmugam was appointed an assistant lecturer in Anatomy.

Provision was made in the estimates for Professors of Medicine and Surgery. The College Council recommended that Dr. P. B. Fernando should be made Professor of Medicine and Dr. M. A. Paul, Professor of Surgery. These officers have assumed duties from October 1, 1936.

Sir Richard Needham, representative of the General Medical Council, London, paid a visit to the College in December, 1936, in connection with the improvement to medical education in Ceylon.

The following figures showing the year's work in the College are given:—

Number of students qualified for L. M. S.	26
Number of students admitted who have passed the pre-medical	16
Total number of students on the rolls on October 1, 1935	132
Total number of students on the rolls on January 1, 1936	127
Total number of students on the rolls on May 1, 1936	117

Results of Examination—Medical.

	1935. December.		1936. March.		1936. June.		1936. July.		1936. September		Total.	
	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.	Sat.	Passed	Sat	Passed
Pre-medical	—	—	—	—	49	17	—	—	30	14	79	31
1st Professional	28	19	33	17	—	—	—	—	17	10	78	46
2nd Professional, Parts I. and II.	—	—	25	19	—	—	26	18	—	—	51	37
Final	8	5	23	10	—	—	22	11	—	—	53	26

Apothecaries.

Number on the rolls in October, 1935	58
Number on the rolls in May, 1936	44

Results of Examination.

	1935. December.		1936. March.		1936. July.		Total.	
	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.
1st Apothecaries	—	—	5	2	20	13	25	15
2nd Apothecaries	13	7	17	5	23	12	53	24
Pharmacists	25	15	—	—	—	—	25	15

Results of Midwives' Examinations.

	1935. December.		1936. March.		1936. June.		1936. September.		Total.	
	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.	Sat.	Passed.
Class I.	10	6	14	14	10	7	7	5	41	32
Class II.	29	26	24	21	32	26	32	28	117	101

Revenue and Expenditure.

	Rs.
Revenue for the financial year	50,334
Expenditure	147,206

(2) KING EDWARD VII. (MEMORIAL) ANTI-TUBERCULOSIS FUND.

The Anti-Tuberculosis Institute in Colombo, the Kandana Sanatorium, and the Kankesanturai Sanatorium were built and equipped from the fund. A sum of Rs. 25,000 which was ear-marked for building a children's ward at Kandana has been handed over to Government and the building which is in hand now is likely to be completed in 1937.

(3) CIVIL MEDICAL STORES.

The following are extracts from the report of the Superintendent, Civil Medical Stores :—

The year under review saw a return to more or less normal conditions after the recent unprecedented outbreak of malaria throughout the Island. Consequently the issue of quinine decreased considerably and the demands made on this establishment showed a corresponding decline. But the output of other drugs, dressings, &c., was higher than in previous years. The consumption of drugs is increasing year by year and the desirability of extensions or new premises for this institution and a proper system of checking the expenditure of drugs at hospitals and dispensaries were suggested. The suggestions are receiving attention.

The increased congestion experienced during the epidemic was considerably relieved, but the necessity for more room for the efficient working of the Stores continues to be more urgent with each year. Steps were taken to acquire a block of land adjoining the present premises. Eventually owing to the high cost of acquisition the question of extensions was again deferred. Subsequently three suggestions were put forward, viz., (*a*) alterations and extensions to present site, (*b*) in addition to (*a*) to extend on to adjoining land, and (*c*) new stores on a new site. Two new sites were inspected and reported upon.

The consumption of quinine decreased considerably, but it was still double that of pre-epidemic years. Quinine requisitions were dealt with as expeditiously as before and the section was able to comply with the requirements of the department without any extra assistance during the year.

The scale system in the Instruments Section which was tried for the first time this year may fairly be said to have justified its adoption. Institutions now apply for such instruments as are necessary to make up to scale. A new circular was issued by the department in order to bring about uniformity of procedure in regard to the accounting of instruments broken, lost, &c. So far this has worked satisfactorily.

The supply of drugs, &c., to estates under the Medical Wants Ordinance was carried on without a hitch, but the premises " Temple Villa " which the section was occupying had to be given up owing to departmental reasons. The section now forms part of the main stores of the establishment. This has no doubt added to the congestion which there is no prospect of relieving until new or improved premises come into being.

Many more preparations than last year were manufactured during the year, thereby affecting a considerable saving to the department. Galenical and other preparations were manufactured at a cost of Rs. 45,334. If these were imported it would have cost Rs. 78,245.

The relief experienced by the despatch section in the previous year was again counteracted by the estates section having had to abandon "Temple Villa". Traffic employed in loading and unloading was rendered safer and easier by repairs to the cart road during the course of the year.

The accommodation of the repair section is of a temporary nature and is quite unsatisfactory. Some years ago the department decided that minor repairs to furniture of all Colombo institutions should be centralized and entrusted this establishment with the work. Since then the work of this section has grown considerably, now giving full-time occupation to 1 overseer, 2 tinkers, and 6 carpenters. All the splints required by the department, which were previously imported, are turned out here.

The system of allocations referred to in last year's report and which was introduced in that year met with a fair amount of success. Institutions as a whole kept within their allocations, while those which exceeded their allocations have been asked to explain.

The following statistics which are for the financial year October, 1935, to September, 1936, are of interest:—

Expenditure: Drugs, dressings, &c., Rs. 485,321; quinine Rs. 508,737; instruments Rs. 54,055; local purchases Rs. 74,302; opium Rs. 21,935; stationery Rs. 11,780; printed forms Rs. 41,538; transport of drugs Rs. 1,913.

The number of requisitions received was—

Civil.—Drugs 8,794; instruments 2,263; stationery; and forms 3,272.

Estate.—Drugs 2,890; stationery and forms 1,315; total 18,534.

Quinine: 25,855 pounds of quinine and 4,557,725 tablets were issued.

(4) SALE OF OPIUM TO REGISTERED CONSUMERS AND VEDARALAS.

No depôts were closed during 1936. There are now 48 depôts in existence. No new consumers were registered during the year.

The total number of registered consumers served from the depôts in the Island during the year was 2,175, as against 2,601 in 1935 and 7,165 in 1926.

1,940 consumers obtained eating opium and 235 obtained smoking opium, as against 2,295 and 306 respectively in 1935 and 6,583 and 582 respectively in 1926.

There were 3,465 registered vedaralas entitled to buy opium for medicinal purposes, as compared with 3,419 in 1935 and 3,532 in 1934.

433 pounds of eating opium were sold to registered consumers and 178 pounds to vedaralas, which realized a total of Rs. 77,110.87, as against 657 and 215; and Rs. 91,656.51 in 1935 respectively.

Ninety-two pounds of smoking opium were sold to consumers during the year which realized Rs. 12,908.80, as compared with 114 pounds in 1935 which realized Rs. 15,687.92.

The total amount realized by the sale of eating and smoking opium was Rs. 90,019.97, as against Rs. 107,344.43 in 1935. The decrease in the sales is due to the 5 per cent. annual reduction in the opium allowed to consumers and to deaths among opium consumers.

The selling price of opium—eating opium 1½ cents per grain and smoking opium 2 cents per grain—remains unchanged.

The above figures show clearly that the number of consumers and the quantity consumed are decreasing year by year.

(5) BUILDING REQUIREMENTS.

Of the major building schemes, that for the Bacteriological Institute was in progress during the year under review and will be completed in 1937. The first stage of the new Nurses' Home has been nearing completion, but this block cannot be fully made use of until one or both of the second and third stages of the scheme is completed. It is expected that the second stage will be started in 1937.

The proposal to rebuild the hospitals at Kalutara, Panadure, Balapitiya, and Hambantota is awaiting the acquisition of the necessary lands and provision of necessary funds.

The re-modelling of other important hospitals, viz., Kurunegala, Jaffna, Galle, Matara, Tangalla, and Negombo is under consideration, and financial provision has not been made yet. Provision has been made in the 1936-37 estimates for improving Badulla hospital and work has been started.

At the request of the Board of Ministers a building programme for the next five years has been drawn up, and it is proposed to charge to loan funds the cost of the following five items, viz., New Out-Patients Department, Colombo, Rs. 750,000, Mental Hospital Rs. 325,000, Home for the Incurables Rs. 150,000, New Leper Asylum Rs. 330,000, and the acquisition of land in Regent street to provide quarters for the General Hospital staff Rs. 500,000.

(6) GENERAL REMARKS.

Malaria Control Scheme.—The scheme provides for the carrying out of malaria control measures as part of an intensive general health scheme based on the principles of health unit work which has been in operation in a few selected areas for the last ten years. In this new scheme malaria receives special prominence.

Malaria in rural areas cannot be dealt with in the same way as in urban areas. In the latter a large population is congregated within a limited area and it is possible for intensive anti-larval work to be undertaken on a reasonably economical basis; but this is not possible in wide areas with scattered population and where rice cultivation depends generally on artificial irrigation. At present the work outlined consists of direct and indirect methods for the amelioration of existing conditions in regard to malaria. The direct method is chiefly the treating of the disease and the control of the insect vector as far as possible, whereas the indirect method deals with conditions the existence of which aggravate the incidence of malaria. Here success is hoped for through maternity and child welfare work, school health work, mass hookworm treatment, control of communicable diseases, general sanitary work, and health education.

In this scheme of work the Field Medical Officer in charge undertakes curative work chiefly on a preventive basis such as providing treatment for malaria, holding treatment clinics for expectant mothers, infants, pre-school and school children, arranging clinics for tuberculosis, hookworm disease, parangi, and venereal diseases. In addition he is concerned with the work of apothecaries in charge of dispensaries in his area and visits at least once a month on certain fixed days each of the central dispensaries, examines and prescribes for cases reserved for his attention and for patients who desire special attention. He visits central and branch dispensaries on other occasions as well in the course of his work.

The Malaria Control and Health Scheme is under the administrative charge of the Assistant Director of Sanitary Services. The Superintendent, Ankylostomiasis Campaign, assists him in the office. The Medical Entomologist, Superintendent, Anti-Malaria Campaigns, and the Sanitary Engineer act as specialists and provide specialist advice and work as required of them.

To each Medical Officer is assigned an area with a population that could be effectively looked after by him and is provided with an adequate staff of Sanitary Assistants, &c. Generally a population varying from about 18,000 to 40,000 has been assigned to each Medical Officer, the former being in sparsely settled areas and the latter in more densely settled districts. The staff

for each Medical Officer will consist of Sanitary Assistants at the rate of 1 per 8 to 10,000 of population, Midwives at the rate of 1 per 4,000 of population, Public Health Nurses or Health Visitors on the same basis as Sanitary Assistants as they become available, 1 Clerk and 1 Field Attendant. It was realized that the ordinary Medical Officer available could not undertake this work without some training. For this work to be efficiently carried out adequate training is most important. As this adequate training was not immediately available and early organization of work was necessary a six weeks' intensive course of instruction was undertaken, 2 weeks in Colombo consisting of lectures and 4 weeks of practical work at the Kalutara and Panadure Totamune Health Units. At the end of the training in practical work each Medical Officer submitted his report on what he saw and did. The first batch of Field Medical Officers was selected and trained from November 23, 1936, for appointment to stations in the North-Western Province and for the Mannar and Mullaittivu Districts of the Northern Province. It was proposed to select and train in 1937 another batch of Field Medical Officers for appointment to the Province of Sabaragamuwa and the Kandy and Matale Districts in the Central Province.

Arrangements for the training of Sanitary Assistants and Midwives are being made. It is proposed to staff one province completely before another is taken up.

On appointment to the respective stations each Field Medical Officer will carry out a general survey of his area in accordance with an outline furnished him by the department.

In relation to the Malaria Control Scheme the division of the Medical Entomologist has taken up investigation work which includes research into the distribution, relative prevalence and breeding habits of the anopheline mosquitoes and the transmission by them of malaria.

It was considered essential to maintain regular observations upon malaria conditions in the vicinity of the rivers and large streams in the areas more intensely affected during the last malaria epidemic. Accordingly 33 such observation stations were established for the purpose of obtaining data which facilitate detection of the approach of conditions liable to cause increased malaria prevalence or malaria epidemics. The observations at the stations are of a comprehensive nature and not restricted to entomological work. They include also the study and collection of meteorological data as well as vital statistics and epidemiological investigations involving the determination of spleen and parasite rates, gametocyte rates, seasonal variations in these rates in different classes of the communities and in the prevalence of the various species of malaria parasites.

Overcrowding in Hospitals.—In Ceylon the principle generally followed has been to admit every patient who seeks admission with the inevitable result of overcrowding of hospitals. This state of affairs is becoming acute, particularly after the malaria epidemic of 1935 which has made the people hospital minded. Some steps should therefore be taken either to build additional wards or to adopt a stricter method of admission to overcrowded hospitals and refuse inpatient treatment in such hospitals to persons who in the opinion of the Medical Officer can be treated as outpatients. Such steps should relieve the situation to a great extent. This method will be unpopular with the public and might also lead to criticism, yet this is the only alternate solution which would not prejudice public health.

Filariasis.—As a result of the investigation into filariasis carried out in 1932 by the Medical Entomologist, it was ascertained that at least two species of human filaria, *F. bancrofti* and *F. malayi*, occurred in Ceylon and that in all probability *F. malayi* was responsible for filariasis in the rural districts. A complete survey of the Kurunegala District has been made and a large amount of parasitological work associated with the survey has been done. So far all parasites found in the blood films examined have conformed strictly to the descriptions of *F. malayi*. Further parasitological and entomological studies in the field and the laboratory are necessary before any definite conclusions can be reached. The insect carriers of *F. malayi* were demonstrated to be certain species

of *mansonioides* mosquitoes. Their particular habit of adhering to the rootlets of the water plant, pistia, which characterizes the larvae of these mosquitoes, indicates that measures to control the spread of *F. malayi* should aim at the removal of this plant from tanks, irrigation channels, &c., near infected villages.

Plague.—Human plague has been menacing the health of Ceylon during the past few years. Infected rats and infected rat-fleas are the usual cause of human outbreaks and the spread of rat plague is usually associated with the grain traffic. The measures taken in terms of Article 13 of the International Sanitary Convention, 1926, to prevent infection reaching shipping in the harbour have been extended during 1936 by the introduction of regulations making fumigation compulsory of cargoes from plague-infected ports. This is an important measure in anti-plague work and eliminates to a great extent the fear of outside infection.

The Chalmers Granaries for the storage of rice in Colombo were built in 1916 for the express purpose of safeguarding the interior of Ceylon against rice-borne plague. Owing to fault in the design the granaries have been over-run with rats among which plague has become established and the infection has on various occasions accompanied consignments of rice to outstations. It is therefore essential that the granaries be made rat-free if Ceylon is to be rid of plague.

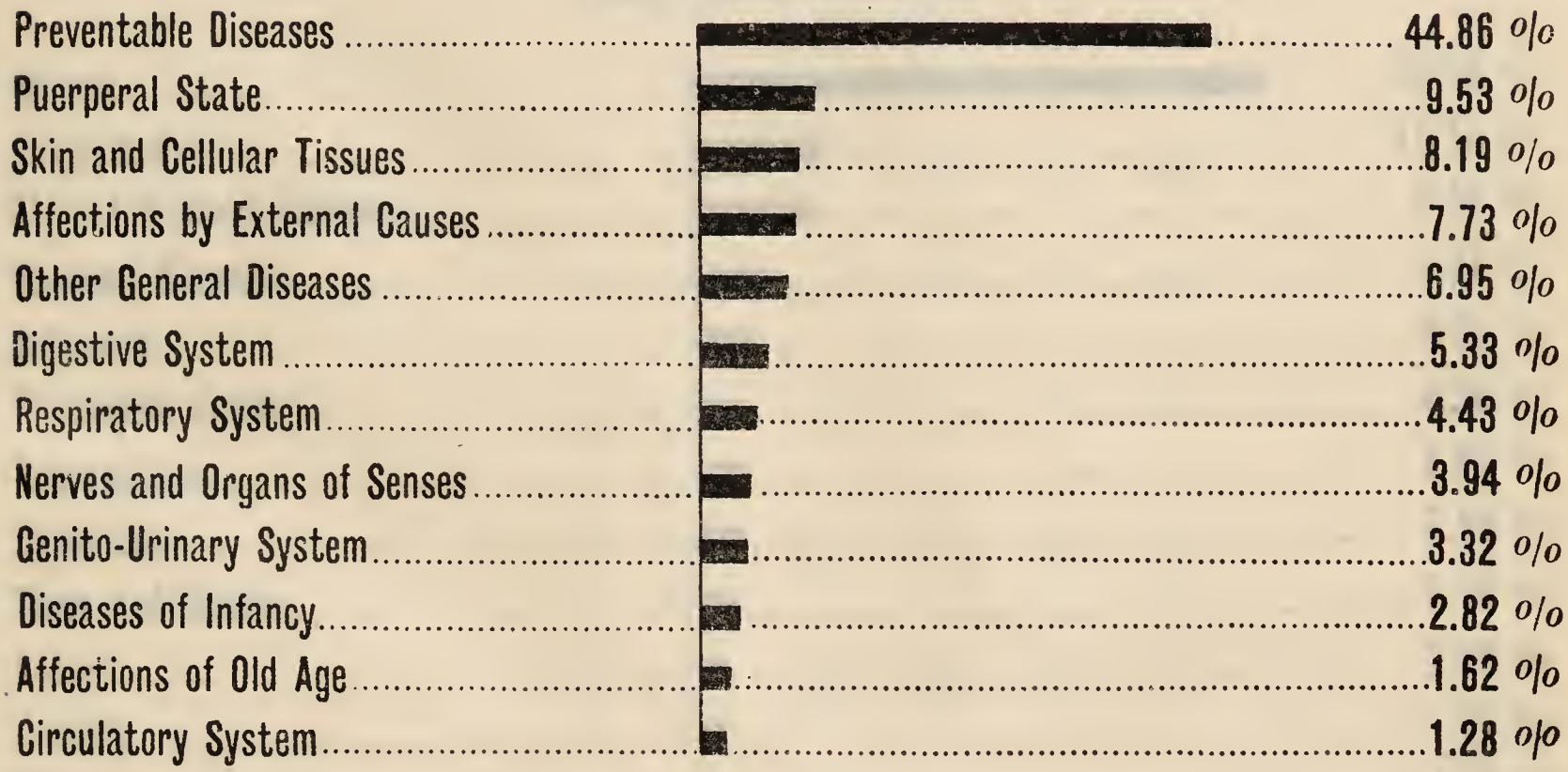
Nutrition.—As stated in previous years, investigations into the subject of diets and nutritional deficiencies of the local population were started four years ago by the Director of the Bacteriological Institute. His report has been published in the Ceylon Journal of Science, Vol. IV., Part I., dated April 20, 1936. The reports of the results of the examinations of the Ceylon vegetables and other foodstuffs sent to the Pharmaceutical Laboratory in London have not yet been received.

S. T. GUNASEKARA,
Director of Medical and Sanitary Services.

Colombo, July 28, 1937.

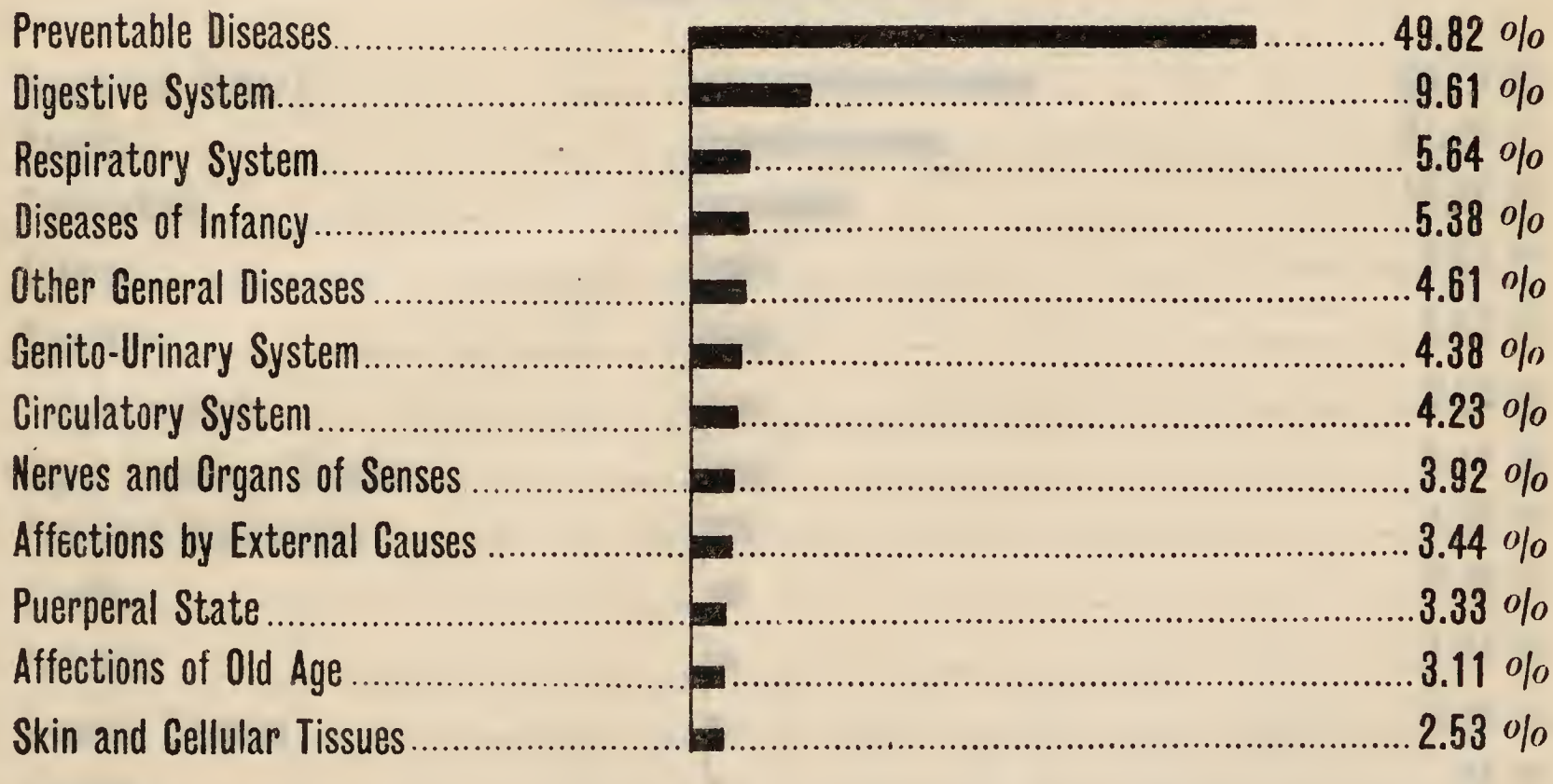
A--Chart showing the General Systemic and Preventable Diseases treated at the Government Hospitals during the year 1936.

Total Cases 324,265



B--Chart showing deaths from General Systemic and Preventable Diseases treated at the Government Hospitals during the year 1936.

Total Deaths 18,990.



SURVEY DEPT. CEYLON. 16. 9. 37.

I.—Hospital Returns.

Province and District.	No. of hospitals.	No. of beds.	No. of patients remaining in hospital at the beginning of the year 1936.	No. of patients admitted during the year 1936.	Daily average No. of patients in hospital during the year 1936.	Attendants.					Patients discharged.			No. of patients who died in 1936.	Average stay of patients, who			Specify the longest period for which any one inmate has stayed.
						Nurses doing no other work.		Servants partially or not at all employed as nurses.										
						Day nurses.	Night nurses.	Not nurses.	Partial day nurses.	Partial night nurses.	Cured.	Relieved.	Not improved.		Died in 1936.	Were discharged in 1936.	Were remaining in 1936.	
Western Province.																		
Colombo ..	19	5,026	3,804	77,975	4,025·45	500	96	535	194	66	28,606	40,738	6,165	6,085	20·76	105·19	38·06	4397
Kalutara ..	5	382	414	14,788	388·32	10	—	38	8	2	6,482	7,149	398	911	8·27	11·16	10·65	360
Central Province.																		
Kandy ..	13	1,157	1,162	40,667	1,196·25	73	13	73	36	20	18,216	19,231	1,195	2,107	9·60	16·55	16·8	354
Matale ..	2	239	253	7,294	229·26	4	—	16	5	5	1,425	56,997	117	437	10·44	11·45	12·28	217
Nuwara Eliya ..	8	389	306	11,434	318·20	11	3	35	—	2	6,363	4,288	204	545	9·18	11·70	14·63	491
Southern Province.																		
Galle ..	5	498	424	18,407	485·75	27	4	105	—	—	6,895	9,824	587	997	5·79	12·97	14·19	282
Matara ..	2	177	236	11,428	258·37	4	—	8	—	3	6,077	4,710	173	536	9·32	7·86	9·01	269
Hambantota ..	4	191	203	6,961	184·57	2	7	15	—	—	2,701	3,415	277	510	9·26	9·43	12·16	143
Northern Province.																		
Jaffna ..	6	303	286	11,651	307·79	11	2	45	—	—	5,047	5,707	540	387	3·68	16·00	13·98	384
Mannar ..	3	130	87	3,356	103·64	2	—	23	1	1	2,419	644	103	194	5·41	8·85	4·14	119
Mullaittivu ..	2	62	56	2,124	46·16	—	—	6	7	—	822	1,207	31	106	8·53	8·25	11·56	83
Eastern Province.																		
Batticaloa ..	5	347	328	4,072	351·52	13	3	22	1	—	3,217	38,089	1,742	291	37·43	62·77	76·06	366
Trincomalee ..	1	57	63	3,833	88·33	3	—	9	—	—	869	2,498	255	161	8·71	8·99	11·07	183
North-Western Province.																		
Kurunegala ..	5	612	752	22,648	735·65	3	—	24	10	2	15,969	48,242	893	1,556	6·9	9·78	8·31	493
Puttalam ..	2	82	75	2,557	71·89	7	—	9	—	—	701	1,586	58	190	9·04	10·95	9·73	114
Chilaw ..	2	168	160	5,299	154·55	—	—	3	7	2	2,280	2,629	82	358	8·42	9·30	10·41	189
North-Central Province.																		
Anuradhapura ..	3	200	235	8,133	222·54	4	11	32	—	2	2,496	4,569	408	514	6·00	10·60	18·22	552
Province of Uva.																		
Badulla ..	12	700	627	22,212	412·85	14	6	34	30	7	37,507	48,895	4,848	968	10·34	8·78	8·88	179
Province of Sabaragamuwa.																		
Ratnapura ..	7	500	603	17,487	512·07	12	—	50	—	4	8,376	7,630	346	1,058	8·67	12·24	10·05	225
Kegalla ..	6	496	573	21,352	577·82	11	—	24	31	7	6,351	13,270	1,085	939	8·18	10·39	9·81	178
Total ..	112	11,716	10,647	313,618	10,670·98	711	145	1,106	330	123	162,819	321,318	19,507	18,990	10·12	18·16	15·24	4,397

II.—Cases treated according to Diseases.

Diseases.	Remaining in Hospital at end of 1935.	Admissions in 1936.	Deaths in 1936.	Total Cases treated in 1936.	Remaining in Hospital at end of 1936.
I.—Epidemic, Endemic, and Infectious Diseases.					
Enteric Group—					
(*a*) Typhoid Fever	171	2,149	495	2,320	121
(*b*) Paratyphoid A	7	262	45	269	11
(*c*) Paratyphoid B	—	99	23	99	—
(*d*) Type not defined	1	359	67	360	10
Relapsing Fever	—	4	2	4	—
Undulant Fever	2	26	4	28	3
Typhus	—	1	—	1	—
Malaria—					
(*a*) Tertian	1,764	59,313	1,199	61,077	1,123
(*b*) Quartan	35	3,001	73	3,036	37
(*c*) Aestivo-autumnal	76	225	5	301	37
(*d*) Cerebral Malaria	15	885	368	900	18
(*e*) Cachexia	308	7,382	389	7,690	197
(*f*) Blackwater	159	29	6	188	1
Smallpox	—	27	3	27	25
Measles	13	580	12	593	7
Whooping Cough	5	141	2	146	5
Diphtheria	4	80	20	84	35
Influenza	156	6,650	139	6,806	158
Mumps	38	661	—	699	7
Cholera	—	2	1	2	26
Dysentery—					
(*a*) Amoebic	124	3,209	390	3,333	93
(*b*) Bacillary	41	1,026	114	1,067	23
(*c*) Undefined or due to other causes	26	753	120	779	22
Plague—					
(*a*) Bubonic	1	33	19	34	—
(*b*) Pneumonic	—	1	1	1	—
(*c*) Septicaemic	—	29	15	29	1
(*d*) Undefined	—	—	2	—	—
Leprosy	951	302	74	1,253	956
Erysipelas	12	325	41	337	9
Acute Poliomyelitis	—	68	5	68	—
Encephalitis Lethargica	1	31	1	32	—
Epidemic Cerebro-spinal Fever	—	1	1	1	—
Other Epidemic Diseases—					
(*a*) Rubeola (German Measles)	—	—	—	—	—
(*b*) Varicella (Chickenpox)	74	2,110	11	2,184	32
(*c*) Kala-azar	—	—	—	—	—
(*d*) Dengue	—	6	—	6	—
(*e*) Yaws	25	931	4	956	20
Rabies	6	45	10	51	—
Tetanus	3	496	163	499	16
Tuberculosis, Pulmonary and Laryngeal	592	3,857	1,054	4,449	590
Tuberculosis of the Meninges or Central Nervous System	1	59	16	60	6
Tuberculosis of the Intestines or Peritoneum	2	142	22	144	10
Tuberculosis of the Vertebral Column	7	71	2	78	—
Tuberculosis of Bones and Joints	3	62	5	65	8
Tuberculosis of other organs—					
(*a*) Skin or Subcutaneous Tissue (Lupus)	2	32	5	34	3
(*b*) Bones	3	4	1	7	—
(*c*) Lymphatic System	14	138	4	152	13
(*d*) Genito-urinary	1	14	2	15	—
(*e*) Other organs	3	19	6	22	1

II.—Cases treated according to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1935.	Admissions in 1936.	Deaths in 1936.	Total Cases treated in 1936.	Remaining in Hospital at end of 1936.
I.—EPIDEMIC, ENDEMIC, AND INFECTIOUS DISEASES—*contd.*					
Tuberculosis disseminated—					
(*a*) Acute	1	156	27	157	8
(*b*) Chronic	2	172	33	174	10
Syphilis—					
(*a*) Primary	28	1,121	1	1,149	38
(*b*) Secondary	20	640	10	660	19
(*c*) Tertiary	3	276	27	279	14
(*d*) Hereditary	2	35	12	37	—
(*e*) Period not indicated	7	126	3	133	9
Soft Chancre	8	255	—	263	8
A.—Gonorrhoea and its complications	107	3,761	35	3,868	139
B.—Gonorrhoeal Ophthalmia	—	41	—	41	3
C.—Gonorrhoeal Arthritis	29	918	—	947	32
D.—Granuloma Venereum	—	5	2	5	—
Septicaemia	—	167	67	167	8
Filarial Diseases	1	102	3	103	6
Acute Rheumatic Fever	6	171	12	177	74
Other Infectious Diseases	4	950	5	954	9
II.—GENERAL DISEASES NOT MENTIONED ABOVE.					
Cancer or other malignant Tumours of the Buccal Cavity	21	306	38	327	8
Cancer or other malignant Tumours of the Stomach or Liver	—	120	31	120	8
Cancer or other malignant Tumours of the Peritoneum, Intestines, Rectum	1	68	22	69	6
Cancer or other malignant Tumours of the Female Genital Organs	17	272	38	289	14
Cancer or other malignant Tumours of the Breast	5	77	10	82	6
Cancer or other malignant Tumours of the Skin	1	74	4	75	5
Cancer or other malignant Tumours of Organs not specified	19	130	16	149	5
Tumours non-malignant	24	501	9	525	23
Chronic Rheumatism	85	4,199	8	4,284	82
Scurvy (including Barlow's Disease)	—	42	1	42	1
Pellagra	7	149	2	156	6
Rickets	16	312	65	328	6
Diabetes (not including Insipidus)	21	450	66	471	24
Beri-Beri	—	31	—	31	—
Anaemia—					
(*a*) Pernicious	4	334	59	338	4
(*b*) Other Anaemias and Chlorosis	22	1,181	66	1,203	38
Diseases of the Pituitary Body	—	18	1	18	4
Diseases of the Thyroid Gland—	—	46	—	46	4
(*a*) Exophthalmic Goitre	—	69	13	69	2
(*b*) Other diseases of the Thyroid Gland, Myxoedema	1	16	8	17	1
Diseases of the Para-Thyroid Glands	—	45	7	45	—
Diseases of the Thymus	—	3	—	3	—
Diseases of the Supra-Renal Glands	1	78	—	79	—
Diseases of the Spleen	—	—	9	—	—

II.—Cases treated according to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1935.	Admissions in 1936.	Deaths in 1936.	Total Cases treated in 1936.	Remaining in Hospital at end of 1936.
II.—General Diseases not mentioned above—*contd.*					
Leukaemia—					
(*a*) Leukaemia ..	—	28	1	28	—
(*b*) Hodgkin's Disease	—	54	5	54	3
Alcoholism ..	—	118	1	118	5
Corrosive Acids ..	1	69	12	70	—
Metallic Poisons ..	—	8	—	8	—
Vegetable Alkaloids ..	—	55	1	55	—
Ptomaine Poisoning ..	1	52	1	53	—
Other Acute Poisonings	—	41	3	41	2
Other General Diseases—					
Auto-intoxication ..	—	8	6	8	33
Purpura Haemorrhagica	—	24	2	24	7
Haemophilia ..	—	23	2	23	4
Diabetes Insipidus ..	3	207	32	210	11
Undefined ..	28	2,131	1	2,159	29
III.—Affections of the Nervous System and Organs of the Senses.					
Encephalitis (not including Encephalitis Lethargica)	2	40	14	42	3
Meningitis (not including Tuberculous Meningitis or Cerebro-spinal Meningitis)	2	103	64	105	5
Locomotor Ataxia	7	26	7	33	2
Other affections of the Spinal Cord ..	4	47	3	51	—
Apoplexy—					
(*a*) Haemorrhage	2	310	95	312	10
(*b*) Embolism	2	156	40	158	4
(*c*) Thrombosis	8	250	72	258	7
Paralysis—					
(*a*) Hemiplegia	20	450	96	470	19
(*b*) Other Paralysis.. ..	12	376	39	388	15
General Paralysis of the Insane ..	2	11	—	13	—
Other forms of Mental Alienation ..	5	162	11	167	6
Epilepsy	9	367	29	376	—
Eclampsia, Convulsions (non-puerperal) 5 years or over	2	102	16	104	26
Infantile Convulsions ..	4	400	152	404	7
Chorea	—	20	—	20	2
A.—Hysteria	6	437	1	443	9
B.—Neuritis	15	612	29	627	22
C.—Neurasthenia	6	420	17	426	12
Cerebral Softening	—	31	8	31	—
Other affections of the Nervous System, such as Paralysis Agitans ..	16	364	24	380	9
Affections of the Organs of Vision—					
(*a*) Diseases of the Eye ..	103	1,940	7	2,043	116
(*b*) Conjunctivitis	24	1,095	4	1,119	27
(*c*) Trachoma	—	69	—	69	2
(*d*) Tumours of the Eye ..	6	108	—	114	1
(*e*) Other affections of the Eye ..	124	3,395	6	3,519	220
Affections of the Ear or Mastoid Sinus	31	937	15	968	36

II.—Cases treated according to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1935.	Admissions in 1936.	Deaths in 1936.	Total Cases treated in 1936.	Remaining in Hospital at end of 1936.
IV.—AFFECTIONS OF THE CIRCULATORY SYSTEM.					
Pericarditis	—	189	49	189	10
Acute Endocarditis or Myocarditis	2	386	104	388	14
Angina Pectoris	2	134	24	136	6
Other Diseases of the Heart	—	9	—	9	—
(*a*) Valvular—Mitral	25	728	175	753	27
Aortic	2	154	32	156	7
Tricuspid	—	19	1	19	—
Pulmonary	3	91	28	94	11
(*b*) Myocarditis	12	465	141	477	6
Diseases of the Arteries—					
(*a*) Aneurism	10	157	38	167	7
(*b*) Arterio-Sclerosis	3	141	26	144	1
(*c*) Other diseases	—	121	25	121	4
Embolism or Thrombosis (non-cerebral)	2	122	23	124	5
Diseases of the Veins—					
Haemorrhoids	22	748	53	770	22
Varicose Veins	1	94	2	95	4
Phlebitis	3	139	13	142	2
Diseases of the Lymphatic System—					
Lymphangitis	4	191	3	195	10
Lymphadenitis, Bubo (non-specific)	8	300	1	308	12
Other	—	—	17	—	—
Haemorrhage of undetermined cause	1	46	6	47	—
Other affections of the Circulatory System	7	362	43	369	6
V.—AFFECTIONS OF THE RESPIRATORY SYSTEM.					
Diseases of the Nasal Passages—					
Adenoids	3	311	2	314	8
Polypus	—	108	—	108	2
Rhinitis	3	149	—	152	9
Coryza	—	21	—	21	—
Affections of the Larynx-Laryngitis	1	89	10	90	4
Bronchitis—(*a*) Acute	98	3,339	139	3,437	91
(*b*) Chronic	82	3,387	184	3,469	93
Broncho-Pneumonia	60	2,809	857	2,869	81
Pneumonia—(*a*) Lobar	171	6,026	2,856	6,197	170
(*b*) Unclassified	12	936	356	948	37
Pleurisy, Empyema	34	788	100	822	24
Congestion of the Lungs	—	24	6	24	1
Gangrene of the Lungs	—	57	17	57	4
Asthma	52	2,433	64	2,485	64
Pulmonary Emphysema	6	130	4	136	12
Pneumothorax	—	98	15	98	6
Other affections of the Lungs—Pulmonary Spirochaetosis	1	96	17	97	4
VI.—DISEASES OF THE DIGESTIVE SYSTEM.					
A.—Diseases of Teeth or Gums—					
Caries, Pyorrhoea, &c.	10	722	4	732	14
B.—Other affections of the Mouth—					
Stomatitis	8	360	9	368	12
Glossitis, &c.	—	117	6	117	1

II.—Cases treated according to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1935.	Admissions in 1936.	Deaths in 1936.	Total Cases treated in 1936.	Remaining in Hospital at end of 1936.
VI.—Diseases of the Digestive System—*contd.*					
Affections of the Pharynx or Tonsils—					
Tonsillitis	8	775	17	783	15
Pharyngitis	2	341	31	343	12
Affections of the Oesophagus ..	—	50	5	50	1
A.—Ulcer of the Stomach ..	4	76	8	80	4
B.—Ulcer of the Duodenum ..	1	49	5	50	7
Other affections of the Stomach— ..	—	—	2	—	—
Gastritis	20	1,279	46	1,299	27
Dyspepsia, &c.	18	1,461	5	1,479	27
Diarrhoea and Enteritis—					
Under two years	46	1,358	257	1,404	37
Diarrhoea and Enteritis—					
Two years and over ..	91	4,602	536	4,693	98
Colitis	66	2,373	232	2,439	73
Ulceration	50	332	68	382	15
Sprue	3	30	23	33	—
Ankylostomiasis	371	14,322	621	14,693	438
Diseases due to Intestinal Parasites—					
(*a*) Cestoda (Taenia) ..	1	56	2	57	—
(*b*) Trematoda (Flukes) ..	—	—	—	—	—
(*c*) Nematoda (other than Ankylostoma)— ..	—	—	—	—	1
Ascaris	52	2,602	217	2,654	44
Trichocephalus Dispar ..	—	—	—	—	—
Trichina	—	—	—	—	—
Dracunculus ..	—	—	—	—	—
Oxyuris	—	4	1	4	—
(*d*) Coccidia	—	—	—	—	—
(*e*) Other parasites ..	7	157	10	164	4
(*f*) Unclassified	44	7	—	51	1
Appendicitis	27	660	62	687	25
Hernia	33	619	52	652	16
A.—Affections of the Anus Fistula, &c.	13	535	31	548	22
B.—Other affections of the Intestines..	—	—	—	—	1
Enteroptosis	5	123	27	128	7
Constipation	21	1,113	4	1,134	21
Acute Yellow Atrophy of the Liver ..	—	13	2	13	—
Hydatid of the Liver ..	—	69	17	69	—
Cirrhosis of the Liver—					
(*a*) Alcoholic	7	187	42	194	9
(*b*) Other forms	12	249	63	261	10
Biliary Calculus	1	81	7	82	3
Other affections of the Liver—					
Abscess	3	275	26	278	20
Hepatitis	12	541	38	553	20
Cholecystitis	3	162	26	165	10
Jaundice	5	195	29	200	3
Diseases of the Pancreas ..	—	32	5	32	—
Peritonitis (of unknown origin) ..	—	265	101	265	11
Other affections of the Digestive System	37	1,519	50	1,556	38

II.—Cases treated according to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1935.	Admissions in 1936.	Deaths in 1936.	Total Cases treated in 1936.	Remaining in Hospital at end of 1936.
VII.—DISEASES OF THE GENITO-URINARY SYSTEM (non-venereal).					
Acute Nephritis	45	1,484	238	1,529	48
Chronic Nephritis	96	1,481	316	1,577	76
A.—Chyluria	1	1	—	2	—
B.—Schistosomiasis	—	—	—	—	—
Other affections of the Kidneys, Pyelitis, &c.	20	787	43	807	27
Urinary Calculus	4	217	13	221	2
Diseases of the Bladder-Cystitis	15	662	31	677	19
Diseases of the Urethra—					
(*a*) Stricture	6	463	26	469	14
(*b*) Other	19	627	6	646	12
Diseases of the Prostate—					
Hypertrophy	7	56	8	63	11
Prostatitis	1	128	7	529	3
Diseases (non-venereal) of the Genital Organs of Man—					
Epididymitis	8	289	24	297	11
Orchitis	12	465	21	477	14
Hydrocele	9	214	18	223	12
Ulcer of Penis	10	279	7	289	13
Other	10	243	—	253	3
Cysts or other non-malignant Tumours of the Ovaries	—	164	12	164	4
Salpingitis	5	312	23	317	—
Abscess of the Pelvis	—	—	—	—	13
Uterine Tumours (non-malignant)	—	139	5	139	11
Uterine Haemorrhage (non-puerperal)	2	192	—	194	3
A.—Metritis	3	161	3	161	4
B.—Other affections of the Female Genital Organs—	—	—	1	—	3
Displacement of Uterus	33	748	17	781	31
Amenorrhoea	4	218	2	222	16
Dysmenorrhoea	2	219	—	221	3
Leucorrhoea	7	397	1	404	13
Other undefined	—	—	—	—	—
Diseases of the Breast (non-puerperal)—					
Mastitis	—	111	—	111	5
Abscess of Breast	6	222	7	228	18
VIII.—PUERPERAL STATE.					
A.—Normal Labour	478	19,897	159	20,375	645
B.—Accidents of Pregnancy—					
(*a*) Abortion	24	1,498	15	1,522	63
(*b*) Ectopic Gestation	4	48	7	52	—
(*c*) Other accidents of Pregnancy	54	2,722	126	2,776	92
Puerperal Haemorrhage	—	181	37	181	48
Other accidents of Parturition	9	432	77	441	6
Puerperal Septicaemia	41	1,678	387	1,719	49
Phlegmasia Dolens	1	24	3	25	—
Puerperal Eclampsia	9	429	84	438	8
Sequelae of Labour	14	623	30	637	22
Puerperal affections of the Breast	2	11	—	13	—
Pregnancy (ante-natal)	67	4,417	77	4,484	281

II.—Cases treated according to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1935.	Admissions in 1936.	Deaths in 1936.	Total Cases treated in 1936.	Remaining in Hospital at end of 1936.
IX.—Affections of the Skin and Cellular Tissues.					
Gangrene	29	328	96	357	14
Boil	—	—	—	—	—
Carbuncle	17	635	9	652	29
Abscess	3	121	1	124	—
Whitlow	105	3,735	46	3,840	117
Cellulitis	330	4,360	277	4,690	172
A.—Tinea	2	96	7	98	—
B.—Scabies	157	4,248	6	4,405	104
Ulcer	235	8,096	—	8,331	19
Other Diseases of the Skin—					
Brythema	17	537	3	554	18
Urticaria	5	234	1	239	6
Eczema	51	2,317	3	2,368	60
Herpes	15	135	—	150	4
Psoriasis	9	284	1	293	6
Elephantiasis	1	79	—	80	—
Myiasis	38	200	—	238	63
Chigoes	33	1,380	6	1,413	52
Cutaneous Leishmaniasis	242	4,854	18	5,096	245
Other undefined	77	4,717	25	4,794	—
X.—Diseases of Bones and Organs of Locomotion (other than Tuberculous).					
Diseases of Bones—Osteitis	25	278	25	303	13
Diseases of Joints—Arthritis	47	1,151	47	1,198	43
Synovitis	6	284	19	290	10
Other Diseases of Bones or Organs of Locomotion	8	204	3	212	6
XI.—Malformations.					
Malformations—Hydrocephalus	1	17	2	18	—
Hypospadias	1	1	—	2	—
Spina Bifida, &c.	—	21	—	21	—
XII.—Diseases of Infancy.					
Congenital Debility	127	7,968	744	8,095	168
Premature Birth	1	336	231	337	1
Other affections of Infancy	24	1,022	64	1,056	18
Infant neglect (infants of three months or over)	3	243	25	246	1
XIII.—Affections of Old Age.					
Senility—Senile Dementia	137	5,166	567	5,303	123
XIV.—Affections produced by External Causes.					
Suicide by Poisoning	1	14	3	15	—
Corrosive Poisoning (intentional)	1	36	12	37	—
Suicide by hanging or strangulation	—	—	—	—	—
Suicide by drowning	1	—	1	1	—
Suicide by firearms	—	—	—	—	—
Suicide by cutting or stabbing instruments	2	—	1	2	—
Suicide by jumping from a height	—	—	—	—	—
Suicide by crushing	—	—	—	—	—
Other Suicides	—	12	—	12	—
Food Poisoning—Botulism	2	67	2	69	3

II.—Cases treated according to Diseases—*contd.*

Diseases.	Remaining in Hospital at end of 1935.	Admissions in 1936.	Deaths in 1936.	Total Cases treated in 1936.	Remaining in Hospital at end of 1936.
XIV.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES—*contd.*					
Attacks of Poisonous Animals—					
Snake Bite	1	30	2	31	—
Insect Bite	—	113	11	113	6
Other accidental Poisonings	1	146	10	147	3
Burns (by Fire)	66	862	122	928	32
Burns (other than by Fire)	5	227	19	232	8
Suffocation (accidental)	—	2	—	2	—
Poisoning by Gas (accidental)	—	2	—	2	—
Drowning (accidental)	—	12	—	12	—
Wounds (by Firearms)	14	285	20	299	25
Wounds (by cutting or stabbing instruments)	111	4,217	87	4,328	105
Wounds (by Fall)	131	5,334	76	5,465	173
Wounds (in Mines or Quarries)	—	366	15	366	27
Wounds (by machinery)	9	655	9	664	32
Wounds (crushing, *e.g.*, Railway accidents, &c.)	28	1,052	31	1,080	39
Injuries inflicted by Animals, Bites, Kicks, &c.	39	891	5	930	14
A.—Over fatigue	—	1	—	1	—
B.—Hunger or Thirst	—	12	2	12	—
Exposure to Heat—					
Heatstroke	—	5	—	5	—
Sunstroke	—	4	—	4	—
Lightning Stroke	—	5	1	5	—
Electric Shock	—	10	1	10	—
Murder by Firearms	—	2	1	2	—
Murder by cutting or stabbing instruments	—	46	9	46	—
Murder by other means	—	5	4	5	—
Infanticide (murder of an infant under 1 year)	—	—	—	—	—
A.—Dislocation	4	315	1	319	15
B.—Sprain	7	412	2	419	13
C.—Fracture	119	2,497	191	2,616	134
Other external Injuries	127	7,014	35	7,141	101
Deaths by violence of unknown cause	—	—	—	—	—
XV.—ILL-DEFINED DISEASES.					
Sudden deaths (cause unknown)	2	104	—	106	18
A.—Diseases not already specified or ill-defined—					
Ascites	17	1,272	43	1,289	60
Oedema	19	241	31	260	41
Asthenia	81	3,016	39	3,097	26
Shock	1	133	43	134	1
Hyperpyrexia	2	124	9	126	35
Other	77	3,391	44	3,468	139
B.—Malingering	72	856	—	926	—